

Government of the Province of Saskatchewan
CANADA
DEPARTMENT OF AGRICULTURE

REPORT

of the

Saskatchewan Overseas Livestock Marketing Commission

1927



Printed by order of the Minister of Agriculture

PRICE \$1.00

REGINA:
J. W. REID, King's Printer
1928





Pg 8

Government of the Province of Saskatchewan
CANADA
DEPARTMENT OF AGRICULTURE

REPORT

of the

Saskatchewan Overseas Livestock Marketing Commission

1927



Printed by order of the Minister of Agriculture

PRICE \$1.00

REGINA:
J. W. REID, King's Printer
1927



CONTENTS

	PAGE
LETTERS OF TRANSMITTAL	7
ACKNOWLEDGMENTS	8
INTRODUCTION	13

PART I

THE SWINE INDUSTRY

CHAPTER		PAGE
I.	ECONOMIC CONDITIONS IN EUROPEAN AGRICULTURE.....	19
	Agricultural Reconstruction in Europe.....	19
	Prices and International Trade.....	23
II.	DENMARK	28
	The Land and the People.....	28
	Utilisation of the Agricultural Area.....	31
	Societies for the Promotion of Danish Agriculture.....	33
	Extent and Causes of Development of Danish Agriculture.....	33
	Costs of Production and Profits; Methods and Results of Surveys	39
	The Economic Unit in Denmark.....	46
	Securing Quality and Economy of Pig Production.....	48
III.	DANISH AGRICULTURAL CO-OPERATION.....	54
	The Nature of Danish Agriculture Today.....	55
	The Principles of Danish Co-operation.....	56
	Boards of Arbitration	57
	Finance, Commodity Buying and Selling.....	57
IV.	THE DANISH BACON INDUSTRY.....	59
	Origin and Expansion of the Industry.....	59
	Basis for Payment	65
	Regularity of Production in Relation to Price.....	65
	Marketing Danish Bacon.....	68
	Marketing By-products.....	70
	Centralised Selling in London.....	71
	Management of Bacon Factories.....	72
	Equipment of the Danish Type of Packing Plants.....	73
V.	EDUCATIONAL AND SOCIAL FACTORS IN DENMARK.....	76
	Agricultural Credit in Denmark.....	76
	Living Conditions in Denmark.....	80
	Danish Education and Agriculture	87
VI.	AGRICULTURE IN POLAND.....	91
	Agricultural Conditions in Poland.....	91
	Livestock Production in Poland.....	94
	Intensive Agricultural Organisation.....	97
	Processing Agricultural Products.....	99
	The Livestock Breeding Industry.....	100
	Agricultural Education in Poznan.....	101
	The Chamber of Agriculture.....	102
	Distribution of Land in Poland.....	103
	Social and Educational Conditions.....	105
	Financing Polish Farming.....	107
VII.	AGRICULTURE IN THE BALTIC STATES, GERMANY AND HOLLAND.....	110
	Agriculture in Estonia	110
	Agricultural Development in Latvia.....	114
	Dairy Farming in Latvia.....	118
	Agricultural Unions and Co-operative Societies.....	119
	Agriculture in Lithuania.....	120
	Co-operation in Lithuania.....	123
	Co-operative Credit	124
	The German Pork Industry	125
	The Bacon Industry of Holland.....	129

CHAPTER		PAGE
VIII.	SOME ASPECTS OF RUSSIAN AGRICULTURE.....	133
	The Russian Agricultural Situation.....	133
	The U.S.S.R. Agricultural Production.....	133
	The Russian Dairy Industry.....	136
	The Co-operative Movement in Russia.....	138
	Pig Production in Eastern Europe and the British Bacon Market..	140
	Market Prospects for Baltic Bacon.....	142
IX.	IRELAND: BACON PRODUCTION AND RURAL ORGANISATION.....	143
	Irish Agricultural Progress.....	143
	The Future of Co-operation in Ireland.....	148
	Co-operation in Ulster.....	150
	The Irish Pig Industry.....	151
	Trend of Volume of Irish Exports.....	153
	Stabilisation of Pork Prices.....	157
	Improved Methods of Marketing	157
X.	THE BRITISH BACON AND PORK INDUSTRY.....	159
	Development of the British Import Trade.....	162
	The Post-war Imports—Bacon, Hams and Pork.....	164
	Trend of Development in the Pig Products Trade.....	166
	Canadian Supplies in the British Market.....	168
	Marking the Origin of Imported Meat.....	170
	General Conclusions on Canadian Bacon Shipments.....	172
	Requirements of the Retail Trade.....	173
	Production and Sales of Hams.....	176
	Selection and Grading of Bacon	177
X.	(PART II) SOME DISTRIBUTION PROBLEMS.....	180
	Wholesale Distribution	180
	Sale Through Agents and Wholesalers.....	180
	The Danish Bacon and Co-operative Trading Company.....	182
	Marketing Output of English Co-operative Bacon Factories ..	183
	English Co-operative Bacon Factories.....	184
	Method of Cure.....	188
	Causes of Difficulties of Co-operative Factories.....	189
	Contracts and Supplies.....	190
	Method of Payment.....	193
	Quality and Grades.....	193
	Canada and the British Market.....	194
	The Empire Marketing Board.....	195
XI.	CONDITIONS IN THE CANADIAN HOG INDUSTRY	198
	The Export Trade of the United States.....	200
	Breeds of Swine in Canada.....	203
	Undesirable Hogs for Bacon Production.....	205
	Producing a Quality Product.....	207
	Market Fluctuations and Grades	208
	Grading and Future Production.....	211
	Some Preventable Losses in Marketing.....	213
	Safeguarding the British Market	215
	Prohibition Against the Use of Borax.....	215
XII.	THE BRITISH MARKET SITUATION.....	219
	Bacon and Hams: Price Comparison per Cwt (112 pounds), 1927 ..	221
	The Export Demand and the Local Market Price	222
	Possibilities of Live Pig Shipments to Great Britain.....	227
	Controlling Market Prices.....	228
	Livestock Commission Associations.....	230
	Marketing Hogs Direct to Packer	235
	Early Methods Adopted by Producers.....	239
XIII.	PRODUCTION PROBLEMS IN CANADA.....	241
	Feeding Growing Pigs.....	243
	Suggested Rations for Feeding Pigs at Different Ages.....	246
	Feeding in Denmark.....	249
	Uniform Production of Hogs.....	250
XIV.	SOME ASPECTS OF MARKETING.....	252
	The Saskatchewan Livestock Pool.....	252
	Direct Marketing of Meat Products.....	254

CHAPTER		PAGE
XIV.	SOME ASPECTS OF MARKETING— <i>Continued</i> —	
	The Hog and Bacon Trade.....	259
	Co-operative Packing Plants.....	266
	Manufacturing and Distributing Problems.....	267
XV.	PRODUCING FOR THE MARKET.....	271
	Effect of Pork Exports on the Production and Price of Hogs.....	271
	Science and the Packing Industry.....	272
	Characteristic Features of the Packing Industry.....	273
 PART II		
THE CATTLE INDUSTRY		
XVI.	THE CANADIAN CATTLE INDUSTRY.....	283
	The Canadian Cattle Industry and External Competition.....	283
	Changing Conditions of the British Market: The Irish Cattle Trade	287
	Improvement of Irish Livestock.....	299
	Livestock Production in Northern Ireland.....	300
	Further Livestock Experiments.....	301
	Additional Agricultural Aids.....	304
	Other Sources of Supply for the British Market.....	305
	Factors Affecting British Market Demand.....	311
XVII.	CANADIAN CATTLE EXPORT PROBLEMS.....	314
	Canadian Cattle in Great Britain.....	314
	Shipping Chilled Beef to England.....	319
	Live Cattle Shipments to England.....	322
	British Facilities for Receiving Canadian Cattle.....	325
	Canadian Cattle in Scotland.....	331
XVIII.	PROBLEMS OF TRANSPORTATION.....	336
	Transportation Costs and Market Returns.....	336
	Freight Rates in Relation to Livestock Transportation.....	341
	Exports of Canadian Cattle and Meats.....	346
XIX.	FINANCE PROBLEMS	351
	Financing the Livestock Industry.....	351
	Finance and Internal Management.....	355
	Financing Livestock in the United States.....	357
	Improving Lending Methods.....	359
	Financing the Packing Industry.....	362
XX.	SOME SPECIAL PROBLEMS IN PACKING AND MARKETING.....	366
	The New Zealand Export Control Plan.....	366
	Catering to Consumer Demand.....	369
	The Work of the National Livestock and Meat Board.....	379
	Restrictions on Importations of Canadian Cattle.....	381
XXI.	REVIEW AND GENERAL CONCLUSIONS.....	385
	THE RECOMMENDATIONS	404
	APPENDICES TO REPORT	411



LETTERS OF TRANSMITTAL.

COURT OF APPEAL
SASKATCHEWAN.

REGINA, February 13, 1928.

HON. C. M. HAMILTON,

Minister of Agriculture,

Legislative Buildings, Regina.

DEAR MR. HAMILTON,—

The Trustees of the Agricultural Research Foundation having received the report of the Saskatchewan Overseas Livestock Marketing Commission, and having discussed it with them and accepted their various recommendations, now have pleasure in handing the complete report to you, so that you may table it for the Saskatchewan Legislature now in session.

This, as you are aware, is the first report embodying research work to be submitted to this Foundation, and I think you will agree the whole investigation has been carried out most thoroughly and will, we trust, make a valuable contribution towards the betterment of our livestock industry.

I am, yours very truly,

P. E. MACKENZIE.

Chairman,

Saskatchewan Agricultural Research Foundation.

PARLIAMENT BUILDINGS,

REGINA, January 21, 1928.

The Chairman,

SASKATCHEWAN AGRICULTURAL RESEARCH FOUNDATION,
Regina, Sask.

SIR,—

At the request of the members of the Saskatchewan Overseas Livestock Marketing Commission, I now have the honour to submit to you their report upon the investigations you entrusted them with, relative to the marketing of our livestock in Great Britain, and a study of co-operative bacon factories in England, the Irish Free State and Denmark.

The actual investigation, including the journey from, and return to Canada, occupied a period of approximately three months.

Upon the urgent advice of Mr. W. A. Wilson, Canadian Agricultural Products Representative in London, and following a consultation with the British Ministry of Agriculture, it was decided that the Commission should extend its inquiries to embrace some of the Baltic States. The party, therefore, after visiting Denmark as a body, split up and the chairman, accompanied by Mr. Edward Evans, proceeded to Poland from Copenhagen. Mr. Hoffman crossed to Berlin and made a short study of livestock matters in Germany. Mr. R. A. Wright and Mr. W. Waldron proceeded to Holland, and thence to the Irish Free State. This splitting up process was again resorted to when the Commission finally met in London, in order to cover as many of the city and country markets and the ports in England and Scotland as possible. With the permission of Dr. W. C. Murray, President of the University, Dr. Swanson later visited Latvia, Lithuania and Russia, his leave of absence being extended for that purpose.

Your Commissioners met at various times following their return to Saskatchewan, and an enormous amount of valuable data collected in this country and overseas has been carefully perused and extracts or references made where necessary and desirable.

The Commission trusts that the results of its mission will prove of benefit to the farmers of Saskatchewan and that the Provincial Government will view with favour its request that at least two of the recommendations may be submitted to the Dominion Government.

Yours respectfully,

W. WALDRON.

Secretary to the Commission.

ACKNOWLEDGEMENTS

The Commission desires to express its appreciation for the assistance rendered by the following:

GREAT BRITAIN.

London: Hon. Walter Guinness, Minister of Agriculture; Sir Francis Floud, K.C.B., now Chairman of the Board of Customs and Excise; Lord Bledisloe, Parliamentary Secretary for Agriculture; A. W. Street, Esq., Markets and Co-operation Commissioner, Ministry of Agriculture and Fisheries; Hon. Peter Larkin, High Commissioner for Canada; W. A. Wilson, Esq., Canadian Agricultural Products Representative; Harrison Watson, Esq., Canadian Government Trade Commissioner; Karl Walter, Esq., Secretary, Horace Plunkett Foundation; The Empire Marketing Board; Chamber of Shipping of



The Canadian Building, Trafalgar Square, London, England.

the United Kingdom; Frank Herbert, Esq., Manager, Danish Bacon and Co-operative Trading Company; National Farmers' Union; H. Blake, Esq., Auctioneers and Estate Agents' Institute; J. Otway Cave, Esq., F.A.I.; Sir George McLaren Brown, European General Manager, C.P.R.; C. J. Smith, Esq., Vice-President, C.N.R.; Harold Robbins, Esq., White Star Lines, Colonisation Dept.

Ipswich: Eastern Counties Farmers' Co-operative Association; Messrs. Spurlings & Hempson; Messrs. Robert Bond & Sons.

Islington: Jas. Bell, Esq., Town Clerk; J. R. Hayhurst, Esq., Chief Veterinary Officer.

Smithfield: H. W. G. Millman, Esq., Superintendent, Central Market; George Nicholls, Esq., of Messrs. George Bowles, Nicholls and Co.

Norwich: Messrs. W. Vincent & Sons, Auctioneers; Major Hugh Beck, Cattle Market; Philip Chapman, Esq.

Goring: Major Morrison (Breeder).

Spalding: Alfred White, Esq., (Breeder).

Reading: Messrs. M. Venner & Sons, Ltd., Bacon Curers.

Cardiff: T. W. Dockett Smith, Esq., Development Agent.

Elmswell: J. Andreason, Esq., Manager, St. Edmundsbury Co-operative Bacon Factory.

Cambridge: Professor H. R. Davidson, University Farm.

Bristol: C. F. England, Esq., Commercial Superintendent, Port of Bristol Authority; Douglas S. Cole, Esq., Canadian Government Trade Commissioner.

Liverpool: Harry A. Scott, Esq., Canadian Government Trade Commissioner.

Manchester: Co-operative Wholesale Society.

Barnstaple, Devon: Thos. Dunn, Esq., C.C.; T. Yeo, Esq., J.P.

Scotland: Messrs. Donaldson of the Donaldson-Anchor Line, Ltd.

Glasgow: Sir John Lindsey, Town Clerk; Gordon B. Johnson, Esq., Canadian Government Trade Commissioner.

Aberdeen: James Barclay, Esq., Secretary Aberdeen Angus Association.

IRISH FREE STATE.

Dublin: The Right Hon. The Minister of Agriculture; D. Twomey, Esq., Live Stock Commissioner; Capt. C. J. McCarthy, Assistant Live Stock Commissioner; F. W. Fraser, Esq., Canadian Government Trade Commissioner.

GOVERNMENT OF NORTHERN IRELAND.

Belfast: The Right Hon. The Minister of Agriculture; Dr. G. Scott Robertson, The Ministry of Agriculture.

DENMARK.

Copenhagen: Valuable assistance was rendered at the time by Dr. Peter Aug. Morkeberg, Live Stock Commissioner, Royal Danish Government. The Commission deeply regrets to learn of the recent death of this gentleman. Herr Arne Hogsbro Holm, Secretary, Agricultural Council; Docent Anton Christensen, Royal Agricultural and Veterinary High School; Konsulent W. A. Kock; M. B. Sorensen, Esq., Special Representative, C.P.R. Co.; Professor O. H. Larsen, Royal Danish Agricultural College.

Aarhus: Herr Direktor M. E. Dal, Co-operative Wholesale Society; Herr Deputy Direktor Rindal, Co-operative Wholesale Society.

Esbjerg: Herr Direktor Larsen, United Shipping Co.

Silkeborg: Herr H. G. Junker, Junkers' Institute; Herr Direktor J. Kastoft, Danish Bacon Factory.

Skandeborg: Herr Direktor M. Hoeberg, Co-operative Bacon Factory.

Horsens: Herr Direktor Alfr. Madsen, Co-operative Bacon Factory.

HOLLAND.

The Hague: T. J. Mansholt, Esq., Director of Agriculture, Ministry of Agriculture.

Aalsmeer: J. G. M. Mensing, Esq., Secretary of the Royal Netherlands Horticultural and Botanic Society.

Leeuwarden: N. H. Blink, Esq.

SWEDEN.

M. de Wachenfelt, Esq., Agricultural Adviser to the Swedish Legation in London.

GERMANY.

Dr. Erich Otto Meynen, in charge of the German Consulate in London.

Hamburg: L. D. Wilgress, Esq., Canadian Government Trade Commissioner.

POLAND.

Warsaw: His Excellency, The Minister of Agriculture; His Excellency, The Minister of Foreign Affairs.

M. Komierowski, Esq., Polish Consulate General in London.

RUSSIA.

E. F. Wise, Esq., Economic Adviser to the Soviet Government; The Commissariat for Foreign Affairs, Moscow; The Commissariat for Agriculture, Moscow; The Society for Cultural Relations; The Chief of the Gosplan; International Institute of Agriculture, Moscow; The Moscow Scientific Agricultural Institute.

ROUMANIA.

Mareu Beza, Esq., Roumanian Consulate General in London.

LATVIA.

E. Birins, Esq., Latvian Consul-General in London; Erich Buck, Esq., White Star Line, Riga; Ministry of Agriculture, Riga.

ESTHONIA.

R. Mollerson, Esq., Consul-General for Estonia in London.

LITHUANIA.

K. Gineitis, Esq., Consulate General of Lithuania in London; Ministry of Agriculture, Kovno.

CZECHOSLOVAKIA.

Dr. F. Pavlasek, Consul for Czechoslovakia in London.

UNITED STATES.

Washington: Chris. L. Christensen, Esq., Division of Co-operative Marketing, Bureau of Agricultural Economics.

CANADA.

Ottawa: Hon. W. R. Motherwell, M.P., Minister of Agriculture; Hon. Chas. A. Dunning, M.P., Minister of Railways and Canals; Hon. J. Malcolm, M.P., Minister of Trade and Commerce; Dr. O. D. Skelton, Under Secretary of State for Foreign Affairs; R. H. Coats, Esq., Dominion Statistician; Dr. Adam Shortt, Dominion Archives; Dr. J. H. Grisdale, Deputy Minister of Agriculture; H. S. Arkell, Esq., Live Stock Commissioner.

Montreal: A. C. Wieland, Esq., Manager, Co-operative Wholesale Society; Alex. D. McGillivray Company, Ltd.; Gunn, Langlois Company, Ltd.

Saskatoon: Dean W. J. Rutherford, College of Agriculture, University of Saskatchewan; W. M. Thrasher, Esq., Secretary, United Farmers of Canada, Saskatchewan Section, Ltd.

Regina: F. H. Auld, Esq., Deputy Minister of Agriculture.

UNIVERSITY OF SASKATCHEWAN
DEPARTMENT OF ECONOMICS.

SASKATOON, February 17, 1928.

HON. C. M. HAMILTON,

Minister of Agriculture,

Regina.

SIR,—

I am directed by the Commission to express to you, and through you to the Government, our deep appreciation of the action taken in releasing Mr. W. Waldron to assume the duties of secretary for the Commission. I can assure you that Mr. Waldron has performed invaluable services for this Commission. We are sincerely grateful that you made it possible to have him assume the responsibilities of this office.

Yours respectfully,

W. W. SWANSON,

Chairman

REPORT of the Saskatchewan Overseas Livestock Marketing Commission, 1927

INTRODUCTION.

In preparing this report a careful survey has been made of available material bearing on the Canadian livestock industry. It is scarcely necessary to state that work of the highest importance in this field has been undertaken by the Dominion Department of Agriculture and the Departments of Agriculture of the various provincial governments. Full recognition is given to the outstanding service rendered by the Dominion Livestock Branch in making available information of a scientific and practical character on the livestock industry. Grateful recognition also is made for material provided by the Livestock Branch of the Province of Saskatchewan. The officials both of the Dominion and the Provincial Livestock Branches have rendered all possible aid and have furnished such data as were required. While in no sense are these officials responsible for the opinions and facts herewith presented, the Commission desires to go on record as expressing its deep appreciation of the many services rendered by them. We should like, also, to refer to the pioneer work done in this field by other investigators. Valuable reports have been submitted to Canadian farmers by previous commissions, particularly the Report on Swine Husbandry in the United Kingdom and Denmark, published by the Dominion Government in 1910, and the Report of the Livestock Commission of the Province of Saskatchewan published in 1918.

Notwithstanding work of great significance for bettering conditions in the Canadian livestock industry carried on by both the Federal and Provincial Governments, there has been a growing conviction among the farmers of Saskatchewan that marketing methods have not kept pace with improvements in production. As will be explained in detail elsewhere, production problems are fundamental in improving marketing methods; nevertheless, marketing has scarcely received the attention necessary to place producers in the strongest possible economic position. Following upon the Report of the Saskatchewan Livestock Investigation Committee, issued in August, 1925, there was a rapid crystallisation of opinion among Saskatchewan farmers and range men respecting the necessity for improving livestock marketing facilities. After considerable discussion, and the holding of many conferences by groups of producers, the Saskatchewan Livestock Co-operative Marketing Association, Limited, was launched to achieve the desired results. In order to place all available information in possession of Saskatchewan farmers,

GRUPPIED CIVIL AND FARM AUTHORITIES, CANADIAN GOVERNMENT
OFFICIALS AND MEMBERS OF THE COMMISSION



Left to right—Mr. W. N. Thompson, Mr. W. Waltron, Mr. R. L. Jones, Dr. W. W. Swanson, Mr. T. B. Williams, Mr. Cameron, Mr. P. J. Hoffman, Mr. Douglas S. Cole, Mr. F. J. Arrowsmith, Mr. Edward Evans, Mr. B. Carpenter and Mr. T. W. Dockett Smith.

this Association, through the Trustee Board of the United Farmers of Canada, Saskatchewan Section, requested the Agricultural Research Foundation to appoint a Commission to undertake the necessary research. The United Farmers of Canada further requested the Commission to widen the scope of the investigation, as far as possible, to include information on the social aspects of rural community organisation in Europe.

The Association was particularly desirous of obtaining information on the production, processing and marketing of bacon hogs in Denmark; on the cattle industry in Ireland; and the opportunities for finding a favourable market in Great Britain for Canadian bacon and pork products, meats and cattle. To deal adequately with these problems, it was later found necessary to widen the scope of the investigation, and to undertake a survey of production and marketing problems in other European countries in so far as these were of importance to the Canadian producer. The Commission, therefore, carried on its investigations, as far as the limits of available time would permit, in Poland, Germany, Holland and the Baltic States, as well as in Russia, Ireland and Great Britain. Every effort was made to secure scientific information on the objects of the inquiry, supplementing this, as opportunity permitted, with data on social and economic factors affecting the farming community in those countries with which Canada must compete.

Special attention was given to production costs, price movements, marketing organisation, government supervision and aids, and developmental programmes in relation to the livestock industry. It is important to observe that careful attention was directed to what should be avoided, as well as to what might be profitably adapted to Canadian agriculture. Realising that the livestock situation, with particular reference to market values, may change with dramatic suddenness, study was given to the fundamentals of the industry, which will always obtain notwithstanding price fluctuations. While for the present Great Britain has ceased to be a profitable market for Canadian beef cattle, it should not be assumed that producers in this country can afford to ignore the possibilities of that market. It may reasonably be expected that the British market will in due time again afford a profitable outlet for Canadian livestock.

Attention should be drawn to the fact that much of the ground covered in this report has been traversed by previous students and investigators. Nevertheless, it is hoped that these problems have been examined in the light of recent experience in such a way as to relate them more intimately to Western requirements. And finally, we wish to acknowledge gratefully information secured from various sources, this material being listed in the appendix. It is impossible to enumerate, in this place, all such sources, but we wish to mention particularly the following:

Bacon and Hams, by Mr. George J. Nicholls;

Agricultural Co-operation in Denmark, by Chris. L. Christensen;

The Co-operative Bacon Factory Industry, being the report of a committee of investigation appointed by the National Farmers' Union;

Report on the Marketing of Pigs in England and Wales, published by the British Ministry of Agriculture;

Financing the Livestock Industry, by Mr. F. M. Larmer, published by the Macmillan Company, New York.

For special material appearing in the Appendix we express our cordial appreciation of services rendered by:

O. H. Nicolaisen and H. Kruse, Consulting Engineers, Copenhagen.
Swift & Company, Chicago.

Swift Canadian Company, Moose Jaw.

R. H. Thomson & Co., Importers, London, England.

W. Weddell & Co., Importers, London, England.

The plans prepared by Messrs. Nicolaisen & Kruse, one of the leading firms of consulting engineers of Denmark, should prove of inestimable value to the farmers and business houses of Saskatchewan interested in the development of the packing industry.

PART 1

The Swine Industry

PART I

The Swine Industry

CHAPTER I.

ECONOMIC CONDITIONS IN EUROPEAN AGRICULTURE.

AGRICULTURAL RECONSTRUCTION IN EUROPE.

Since the close of the war the European nations have concerned themselves not only with the restoration of their economic life in general, but with improving living standards among the agricultural classes in particular. Much has been attempted in the direction of placing farming in a better economic position relatively to other basic industries. It is significant that agricultural problems formed a major part of the agenda of the International Economic Conference held at Geneva in May, 1927. At this conference experts from many countries analysed the general economic situation as it obtained, at that time, throughout the world, with special reference to the economic and social status of those who draw their living from the soil. At this great gathering representatives from fifty nations were assembled to devise ways and means for improving the lot of those who live upon the land, and in placing the agricultural industry in a more just relation to other basic industries, with a view to restoring the disturbed economic equilibrium. It is notable that for the first time agriculture was given a place on the agenda of an international conference equal to that formerly given to industry, finance and commerce. This involved a clear recognition of the fundamental importance of agriculture in any programme which seeks the restoration of economic stability and prosperity throughout the world. An examination of the documents prepared for this conference, and discussed by scientists and economic authorities, discloses the fact that there was a general consensus of opinion that agricultural depression unfortunately extended over wide territories not only in Europe but in the newer countries beyond the seas. True, favourable reports were presented on some aspects of the agricultural industry in several countries, but nevertheless it was felt that agriculture was not making progress parallel to the improvement to be found elsewhere. It was agreed that the decline of agriculture in those countries from which the industries of Europe draw raw materials and food supplies was a matter of concern not only to primary producers but also to the industrialists of the Old World. It was recognised that the buying power of agriculture everywhere should be restored not only to provide farmers with a reasonable living standard, but also to improve the markets for the manufacturers of Europe. At the same time it was well understood that it was impossible to find a

ready explanation for the difficult conditions obtaining in European and other agricultural areas today, because the underlying forces that have disrupted the industry are complex, and vary in character from country to country.

In continental Europe it is obvious that one of the chief causes of agricultural depression is to be found in the inflation of the currencies that took place during the war and in the post-war period. As a consequence there is a dearth of working capital for farming, and in many instances the cost of both fixed and working capital has reached prohibitive figures. Poland, as was found by personal study of the agricultural situation, suffered, and is still suffering seriously, from the effects of inflation, and the flight of values from the former currencies that circulated within that country. This condition, however, was true not only of Poland but of all such highly organised nations as Germany, Denmark, Belgium, Sweden and France. In some of the European countries taxes on the agricultural industry are three times as heavy as in 1914. The loss of livestock, the deterioration of machinery, and the reduced fertility of the neglected soil made it extremely difficult to maintain living standards, and at the same time to carry the tremendous obligations imposed by the State in its efforts to reconstitute the national economic life. In other instances the changed political and economic frontiers, of which Austria is an outstanding example, have made it difficult to find a ready market whether for the products of machine industry or of the soil. The new countries created by the peace treaties have sought to make themselves economically self-sufficient by establishing tariff barriers, and by the inauguration of a policy designed to enlarge exports while keeping imports at the lowest possible level. For years, Russia and the Danubian countries, once important sources of grain and other supplies, curtailed production either of necessity or because of disturbed political and social conditions. It is difficult for Canadians to realise how serious this has been for the great industrial nations, Great Britain, Germany and Austria. Western manufacturing nations before the war sent their products to Russia, Roumania and Hungary, and took in exchange agricultural commodities. The disorganisation of agriculture on the Danube and in Russia has compelled Western Europe to rely to a greater extent than in the past upon Canada, United States and the Argentine for food and other agricultural supplies. As will be explained later, agricultural production is steadily increasing in Europe, especially the production of livestock and related products. In some directions, indeed, such as in the production of swine, there is an over-supply, which later may be absorbed in the European markets with the restoration of manufacturing and commercial enterprises. From this standpoint, if from no other, the rehabilitation of the economic life of Europe is of outstanding importance to the farmers of Western Canada.

These facts became quite evident as a result of the deliberations, at Geneva, of leaders in the agricultural industry. Again and again attention was sharply focused upon the interdependence of industry, commerce and agriculture in the modern world. It was concluded,

and soundly, that it is hopeless to look for lasting prosperity in any one of these basic industries unless that prosperity is shared by the others. From this point of view, Canadian farmers must concern themselves with the restoration of economic life of the Old World, particularly that of the United Kingdom.

A disturbing factor in the general economic situation as it was analysed at Geneva, was the marked discrepancy between the index number of the prices of farm products and the index number of industrial prices. It was concluded that this discrepancy could mean only one thing—diminished purchasing power for farmers, and a consequent slowing down of the industries that supply them with tools, machinery, general farm supplies and household necessities. The disparity of prices was traced not so much to any abnormal increase of particular agricultural commodities, as to the decreased demand for agricultural products from the manufacturing nations. It was suggested that improvement might take place along two lines. First, by increasing the demand for farm products by restoring machine industry. The line of progress here was to be found in reducing the height of tariff barriers, and abolishing irritating and burdensome systems of export restrictions, which bore particularly heavily on agriculture, as for example, in Poland. Second, it was held that more serious attention should be given to improving the technique of production, particularly in the case of the small or peasant farmers. It was thought that much might be done by extending the principles of co-operation, both in improving credits and methods of marketing. Considerable attention was devoted to devising ways and means for furnishing farmers with dependable data so that producers might be in a better position to adjust supply to effective demand. The importance of government supervision and aid in the campaign for eliminating plant and animal diseases was emphasised. It was recognised that a great deal remained to be done by way of improving the quality of livestock, and above all by standardising the quality and grades of the principal products of the farms.

The patent fact is, agriculture is the occupation of the majority of workers throughout the world, and its products, therefore, represent the greater part of human labour. The exchange of farm production for industrial commodities constitutes the basis of world trade. As was recognised by the experts at Geneva, the agricultural population furnishes a huge reservoir of human energy which must be drawn up to replace the wastage occasioned by the excessive development of industry in the modern world. It is a truism to state that the quantity of food-stuffs and raw materials produced by agriculture is the basic factor determining the maximum limits of industrial development. From every standpoint agriculture is of supreme importance to the well-being, not only of the millions directly associated with it, but to the millions of industrial and commercial workers employed elsewhere. It follows that every effort should be made to maintain, not identical, but as desirable living standards in agriculture as are to be found in other industries.

An important conclusion of the Geneva Conference was that improvement in agriculture must, in the first place, be the work of the

hands and brains of farmers themselves. Nevertheless, to achieve that result, it is essential to place at the disposal of the agricultural community every resource of modern science and industrial technique; to organise crop production and stock breeding on a scientific basis; and to carry on by all available means a relentless campaign against the diseases and enemies of plants and animals. Emphasis was given to the necessity of devising improved methods of marketing; of standardising farm products for the benefit of producers and consumers alike; and of providing essential credits so that production might be carried forward on the best possible basis. In Europe, particularly, the large number of relatively small farms makes co-operation vital for permanent success. Much thought was given to the formulating of a plan by which the interests of co-operative organisations representing producers and consumers might be more closely articulated. No less significant was the reaching of the conviction that farmers should not be forced to produce and sell on a speculative basis, but that agriculture should be, so to speak, regularised by perfecting machinery for controlling costs and relating costs properly to selling prices.

From the above standpoint, a very careful study was made of the chief phases of co-operation as it affects agriculture. Attention was given to methods for forming co-operative supply societies, for selling farm products, and for the formation of associations to provide adequate credit facilities. It was asserted that organisations along these lines would improve not only the economic position of farmers, but achieve a certain measure of economic solidarity as between the various classes in any country. It was recognised at Geneva that although hard work is necessary for success on the land as well as elsewhere, such work could yield the desired results only if directed by intelligence—by voluntary associations of producers employing experts, relying in the smallest possible degree on State aid.

Careful study of the actual conditions obtaining on the farms in Denmark, Poland, Baltic States, Ireland and Great Britain disclosed the fact that the greatest care is being given to problems of production, it being recognised that sound, scientific production is a major factor in successful marketing. In Denmark particularly it was evident that the farmers had grasped the significance of the fact that they could not successfully produce what they pleased, but only what the markets of Europe and particularly of Great Britain demanded. It is not necessary to emphasise the fact that what the farmer produces, whether by bad advice, lack of information, or other cause, is frequently quite other than what the market actually requires. In the countries visited, by discussion with farmers themselves, technical experts and government officials, it became clear that only those types and grades of farm products can be profitably marketed which meet the requirements of effective market demand. Denmark notably has concentrated on this problem. In that country, the farmers have analysed market problems not only from the standpoint of consumer demand, but of devising ways and means of most economically meeting that demand by producing quality products. The Danish farmers give untiring attention to the

production of those types, grades and qualities of agricultural products which meet market requirements. They have learned that economical production of quality products is winning half the battle of successful marketing. The importance of cost studies from the standpoint of production will be examined later; but it may be stated at this point that intensive concentration on production costs, on economical methods of production, on bringing to the market standardised and tested commodities, has laid on broad and deep foundations the Danish agricultural industries. In a word, the Danes have learned the secret of using the best brains of the country for improving the technique of production, and relating the productive process through co-operation to a far-reaching and effective marketing programme.

PRICES AND INTERNATIONAL TRADE.

It is beyond the scope of this study to make a thorough-going analysis of international prices and trade; nevertheless it is essential to examine briefly some of the outstanding characteristics of the post-war financial conditions obtaining in Europe, insofar as these affect the buying power of the various countries concerned, but more particularly the buying power of the British market. During the war the financial structure of Europe was seriously impaired, parts being actually destroyed, with far-reaching effects upon the economic life of that continent, resulting in a serious disorganisation of international trade and bearing heavily upon living standards. Both during the war and since, European currencies have violently fluctuated, including the currencies of even the strongest nations,—Great Britain, Sweden, Germany, France, and Denmark. As is well known, inflation produced a period of more or less prosperity, the ill effects of which did not become apparent until an attempt was made to resume normal trade relations. Notwithstanding the heightened domestic trade and the fictitious increase in living standards that occurred during the time of inflation and temporary prosperity, nearly all the countries concerned have since definitely committed themselves to the re-establishment of their monetary systems on a gold basis. Violent currency fluctuations led to economic disaster over the greater part of Europe. Such fluctuations effected fundamental social changes, yet today interest centres upon those longer price swings, which eventually are more important in shaping the economic life of the nations for the future. These periodical price movements, while not wholly dependent on gold supplies and the expansion and contraction of credit, are, none the less, intimately related to them. It is therefore important to understand what is going forward among these nations that either directly compete, or in the future may be in a position to compete seriously with Canada in placing products on the British market.

Even under normal conditions it is extremely difficult to secure fairly stable price levels, because of the many forces operating upon the supply of, or the demand for, gold, credit and commodities. It is obvious that the value of gold, and hence its purchasing power, is affected by the monetary and credit demand for the precious metal, by increase in population and in trade, by the development of banking

habits which may economise the use of gold, and by many other factors. The population and trade of the world are rapidly increasing, and increasing at a faster rate than the available annual production of gold. It is interesting to note that the leading commercial nations are perfecting their credit mechanism, largely as a result of war experience, to an extent that offsets the increased demand for the actual use of gold for the support of trade and industry. This is especially important in view of the additional pressure placed upon gold reserves through the increase of prices following upon the outbreak of war, and during the post-war period. After readjustment, generally speaking, prices in Europe, and also on this side of the water, settled at a point about half as high again as the prices of 1914. It is calculated that in 1914 there was about \$2,500,000,000 of gold in actual circulation in the hands of the people, whereas at the present time this sum has been reduced, under the exigencies of war conditions, to about \$500,000,000, the balance having found its way into government treasuries, and central bank reserves. The huge increase that has occurred in bank reserves by withdrawing the precious metal from hand-to-hand circulation has made it possible to increase the volume of government and bank paper money, and bank credit currencies. Along with this change of national monetary habits in Europe has gone the concentration of gold reserves in central banks,—in the Bank of England, the Federal Reserve Banks of the United States, and the central banks of the continent. As is well known also, there has been a far-reaching change in the relative gold holdings of the several European nations, and the United States. Before the war the United States held about 25 per cent. of the world's gold, as against 50 per cent. of the world's gold at the present time. This vast shift of gold reserves from Europe to America accentuated the difficulties, already very great, with which the European nations were confronted in stabilising their currencies, and has led to the elaboration of financial mechanism for economising the use of gold. In lieu of gold, there has been a widespread use of bank assets readily convertible into the yellow metal, these assets substituting for gold as monetary reserves. Thus, Germany, Austria, Poland and other countries hold substantial quantities of bills of exchange on free gold centres, such as Great Britain and the United States. As a support for their paper money, they also hold bank notes, and have created deposit accounts abroad. It is important to realise that the gold reserves of Great Britain and the United States must therefore be regarded not merely as the underlying financial support for their own credit and currency, but also for the monetary and credit structure of various continental nations, especially of the so-called gold-exchange standard countries. In this way not only is the responsibility of the Bank of England and the Federal Reserve Banks increased, but the gold holdings at their command are made to support an almost world-wide credit structure, which in turn leads to further economy in the utilisation of available gold reserves. For example, the Danish National Bank in arranging to bring the krone back to par secured a credit of \$40,000,000 from the Bankers Trust Company, New York, and a further credit of £3,000,000 from a group of financiers in London. These loans were guaranteed by the state and were a most decisive factor in restoring the

value of the krone in terms of gold. It is a striking illustration of the greater efficiency with which gold reserves are used, since scattered reserves have been replaced by centralised reserves at strategic points. Along with this there are other gains, for gold in the hands of the people earns nothing, wears itself away gradually, and cannot be relied upon as a reserve in times of crisis. Thus, as has been observed above, the shock of war, along with the economic havoc wrought, resulted not only in speeding up the improvement of industrial technique, but also of financial devices.

The second great change in continental practice is perhaps more important, namely, the substitution of stable foreign exchange for a large part of the gold reserves formerly held. This foreign exchange is the ultimate reserve against currency, notes, and banking liabilities. The foreign exchange held may consist of bank notes, drafts against deposits in first class foreign banks, or short-term bills of exchange. These represent claims against gold reserves in countries having stability of currency on the gold basis, or against reserves in countries on a free gold-exchange standard. The object sought is to hold exchange in such a form that it can be realised upon without question, in gold, on demand. There is this additional advantage, that this type of reserve may earn interest, which gold reserves fail to do. These devices represent great economies in the use of the available supply of the yellow metal; and in some degree at least carry out the recommendation of the financial commission of the Genoa Conference, which advocated the use of foreign exchange as backing for central bank note issues.

The Treaty of Versailles, along with other treaties, set up new European countries, and destroyed or diminished the economic power of others. Among other effects was the creation of new currencies issued under novel conditions. Currency systems of the old Europe were comparatively simple, consisting of the pound sterling, the money of the Latin and Scandinavian Monetary Unions, crowns, marks and roubles. Sterling and the Swedish krone are once more on a gold basis, and the Danish and Norwegian krone practically on a gold parity, with the German mark reinstated under certain restrictions. In other countries, however, the pre-war units have been thrown aside and new ones established from the pengo of Hungary to the chervonet of Soviet Russia. We may briefly refer to the more salient features of the currencies of Eastern Europe and the Baltic States, these being the countries that will probably afford future competition to the Canadian livestock industry in British markets.

Poland was one of the first countries to introduce a new currency unit, and did so without relying upon international aid. From January 1, 1924, all payments to the government were made in terms of the zloty, which is equal to a gold franc. Shortly afterwards the zloty was made the unit for all transactions, and was made exchangeable for 1,800,000 Polish marks, the latter continuing as legal tender until the middle of the year. When the new monetary unit was established the Bank of Poland was erected, beginning business in April, 1925. It was given a monopoly of bank note issues, the notes having full legal tender. In principle they are redeemable in gold but they have not as yet been brought up to the free full gold standard. Poland

permits exports of gold only under license except under special and very restricted conditions. The notes are supported by 30 per cent. of gold, and bills of exchange in stable foreign currencies. There is a special tax on the note issue graded inversely to the amount of reserves held. The zloty was worth approximately its par value until July, 1925, when it depreciated to about one-half of its face value. The government has itself issued notes, which, however necessary, has tended to depreciate the value of the zloty. In an effort to restore the unit of value to par, the state is effecting every possible economy and lending its support to industry, including agriculture.

Soviet Russia, after permitting its paper money issues to become practically worthless, established the State Bank of the Union in November, 1921, and in the following year gave it the right to issue notes in terms of gold. A new unit of value was adopted, the chervonet, the equivalent of ten gold roubles, or £1 1s. 1 $\frac{3}{4}$ d. The bank has two departments, the issue department being concerned solely with providing and protecting the note circulation. The notes are legal tender and must have a reserve of not less than 25 per cent. of gold, platinum and stable foreign currencies, the balance being protected by first class short term commercial bills. In March, 1924, the Soviet rouble was abandoned; and treasury notes, issued in roubles subsidiary to the chervonet, were emitted. The bank notes are not redeemable in gold, and there are strict limits on the exportation of that metal. Consequently it cannot be claimed for Russia that it is yet on a full gold standard.

In the four Baltic States, comprising Finland, Latvia, Esthonia and Lithuania, having a combined population of less than 10,000,000, there are four distinct currency units with no simple arithmetical relation between them; but all these countries have attempted to reach financial stability largely by their own efforts. They have made marked and steady progress, all the more remarkable when one recalls that they have had to set up new political machinery during the past ten years. Latvia introduced the gold franc as the legal unit of account in June, 1921. In 1922, the lat, equal to the gold franc and to fifty Latvian roubles, was adopted as the currency unit. Although treasury notes are in circulation, the Bank of Latvia, founded in 1922, issues notes which are full legal tender. On the first 100,000,000 lats 50 per cent. in gold or stable foreign currency must be held; from 100,000,000 to 150,000,000, 75 per cent. must be held; and over one hundred and fifty millions, 100 per cent. The notes are redeemable on demand in gold or foreign currency; and the bank's gold reserve is on deposit at the Bank of England.

Lithuania has a somewhat different currency system, the unit being the litas, with a par value of one-tenth of the United States dollar. In October, 1922, the Bank of Lithuania was founded and given a monopoly of note issues. The notes must be covered up to one-third by gold or foreign currencies, and the balance by first class securities. Although the notes are of full legal tender they are not yet redeemable in gold and consequently are merely on a gold-exchange standard basis. Esthonia is working out its financial reorganisation along somewhat similar, but not identical, lines. In a general way all these European

countries have taken protective measures against inflation by limiting the volume of note issues, by carefully supervising reserve requirements, and by placing restrictions upon advances to the state. The more striking feature, however, is a wide utilisation of foreign exchange as cash reserves against note and other liabilities. This opens up a wide field for economic inquiry, but goes beyond the limits of the present investigation. The important point to notice is that continental Europe has made a serious effort to rehabilitate the financial structure, with a view not only to securing economic stability in the domestic field, but to reviving external trade, particularly the export trade.

Turning to Great Britain one finds that, despite the heavy burdens of taxation and war debt, remarkable progress has been made in achieving financial and economic stability. The return to the gold standard was the outstanding financial event of 1925, and this was effected without noticeable economic disturbances, indicating that Great Britain had sufficient reserve power to recover and hold a free gold market and to firmly establish itself on a gold basis. It should be observed that this was accomplished without making use of the facilities offered by the great banks of the United States, and as an exchange transaction was eminently successful. None the less, such acute and well-informed observers as Mr. Reginald McKenna believe that for the time being, the rise in the value of sterling seriously impaired British export trade. As is well known the low value of the French franc has hitherto prevented unemployment in France, as it has greatly stimulated exports, whereas the return of Germany to the gold standard has created a serious unemployment problem. Ultimately the lower price level in England will stimulate exports and hence increase British buying power for Canadian and other agricultural products. While presenting at one period a formidable difficulty to the revival of British trade, it is now believed that the revaluation of sterling has ceased to be a disturbing factor in the foreign trade of the United Kingdom. There is no doubt that the exceptional depression through which Great Britain has passed from 1921-1927 has been largely due to the temporary financial conditions of the country brought about by the stupendous effort put forth to bring the pound sterling back to par, and to demoralisation of the currency systems during the same period in European countries. English economic observers believe that in addition to rehabilitating the country's financial system, it will be necessary to improve the equipment in the heavy industries, as well as improve industrial organisation; to find new markets for the present surplus of coal and other basic materials of industry, or to introduce new processes for their utilisation; and to relate more carefully the burden of taxation to the economic capacity of the several industries of the nation. It is possible that wage costs are too high in the sheltered trades; but the real solution of this problem is not to be found by reducing living standards, but by relating wages more closely to volume and value of output. However that may be, Great Britain, due to her geographical position, her financial supremacy in the international field, her trained labor supply, her resourceful leadership in industry and agriculture, and her world-wide commercial contacts, will continue to occupy a commanding position in the sphere of international trade and commerce.

CHAPTER II.

DENMARK.

THE LAND AND THE PEOPLE.

The Kingdom of Denmark comprises an area of 44,400 square kilometres, this figure including the small group of islands, the Faroe Islands, in the Atlantic Ocean. Denmark proper covers an area of nearly 43,000 square kilometres. The surface area, however, is curtailed because of the peculiar configuration of the country. As a whole, Denmark consists of two parts: First, the peninsula Jutland, which is attached to the Continent of Europe, consisting of 30,000 square kilo-



The Square at Copenhagen

metres, and second, the islands in the waters between Jutland and Sweden, which have a total area of 13,000 square kilometres. The largest islands are Zealand, Funen, Lolland, Bornholm, Falster and Moen. The soil actually under cultivation totals 32,998 square kilometres; forests and plantations comprising 3,674 square kilometres, while the balance consists of bogs, heaths, dunes, roads, etc. The productive soil, including agricultural land and forest areas, amounts to about 94 per cent. of the surface of the islands, and about 83 per cent. of the land area in Jutland. The bogs are exploited to secure peat for fuel, while the dunes and heaths are for the most part unproductive. Denmark is deficient in minerals, for neither coal nor metals can be

profitably mined anywhere, although coal and bog-iron ore are found in certain places. Chalk, which is found almost everywhere, is quarried in great quantities, and is used in the cement industries. Clays of commercial value are also found.

The extensive waters which surround the country have profoundly influenced Danish life and history. These waters afford easy communication between Denmark and external trading centres, particularly in Great Britain. On the North Sea coast, the only good harbour is found at Esbjerg, which is the chief trading port in bacon and other farm products, with Great Britain. Surrounded by the sea as it is, the climate of Denmark has a higher average temperature than many places on the same parallel of latitude. The mean temperature for the whole of the year lies between seven and eight degrees Centigrade, and is held at that point as the result of a comparatively mild winter. The character of this "coast climate" is further seen in the slight difference between the day and night temperatures. On the other hand, the frequent changes in the direction of the wind, because of the proximity of the sea, often leads to very considerable differences of temperatures from day to day. Prevailing winds are from the west and south-west, and calm weather for several days at a time is of rare occurrence. The average annual rainfall is about 600 m.m., being sufficient for agricultural requirements, and coming for the most part just when needed by the growing crops.

The population of the country is very homogeneous, the Danish people being of the Gotho-Germanic race which has lived in the country since prehistoric times. The population is fairly dense, amounting to 3,390,000 in 1925, which gives an average per square kilometre of about 79 persons. As compared with the densely populated industrial districts in other parts of Europe, such as are to be found in England, Belgium, and certain parts of Germany, the pressure of Danish population on the land is not great. The islands have 132, but Jutland only 50 inhabitants per square kilometre. Of the population of the country in 1921, about 1,807,000 persons, or about 55 per cent, lived in towns. Copenhagen is the only really big town in Denmark, and contains about 21 per cent. of the entire population of the country. The next large town, Aarhus, contains only 75,000 inhabitants. Danish official statistics disclose the fact that a large number of the provincial towns are very small, and are really, therefore, rural in their industry and outlook. Fifty years ago the urban population comprised only a quarter of the inhabitants of the country, but as a consequence of the development of industries for commerce, and the trend toward specialisation in modern times, the urban population now amounts to more than one-half. The development of agriculture has undoubtedly led to the development of country towns, and even to the astonishing growth of Copenhagen. Although Danish agriculture has expanded the value and the volume of its products, the extensive use of agricultural machinery has made it possible to carry on agriculture with fewer workers. The population finds employment chiefly in agriculture, the fisheries, and in machine industry. Commerce and financial operations absorb large numbers, as also do transportation and the commission busi-

ness. The remainder of the people are employed in administrative occupations, in the arts and sciences, and in domestic industry.

Of Denmark's total area, about 76 per cent. is actually used for gardening and agriculture. From 1866 to 1919 the agricultural area has been increased by about 420,000 hectares, the result of reclamation projects in Jutland. It has been a fixed policy of the state for many years to establish rural workers on the land. This has been accomplished by increasing tillable land by reclamation, but chiefly by the division of the bigger farms. The greater part of the farms are protected by a prohibition against being incorporated in large farms, or concentrated into big estates. On the other hand, parcelling is allowed, although it cannot be carried beyond a stated minimum. Since 1919 there has been a prohibition applying to all farms, against the closing down of any farm without the approval of the Ministry of Agriculture. Constructive action for the establishment of new small holdings was taken in 1899, when an Act was passed providing for the setting aside of certain lands for sale to farm labourers. Under later Acts, the size of the holdings was considerably increased. Under the Act of March 29, 1924, a loan may be granted up to an amount not exceeding nine-tenths of the total loan value, which in the year 1926 was fixed at a maximum of 20,500 kroner. Part of the loan may be set aside for the erection of buildings. Under the various Small Holdings Acts, 14,857 holdings had been established up to 1925. In 1919 important legislation was passed looking forward to the taking over of Church lands and entailed estates, to be divided into smaller farms. The significance of this legislation is noted elsewhere in this study. It must suffice to say that the Danes have not hesitated to break with traditions, and even if necessary to offend the constitution, in making a place for the actual producer on his native soil.

For agriculture as a whole, the position is that about four times as much grain and feeding stuffs are imported as the amount of grain produced by the country itself for human food and industrial purposes and for export. From a small beginning, about 1880, the importation of feeding stuffs by 1913 amounted to more than 3,000,000,000 pounds of oil cakes, bran, maize, and other grains for feeding purposes. Denmark's own home production increased about 85 per cent. from 1880 to 1914, but its grain production supplied only 60 per cent. of its annual consumption, in pre-war years. On the small and medium sized holdings the purchase of grain by far exceeds what is produced, and only the big farms produce more grain than is bought for fodder.

Most weight is, however, attached to animal husbandry, which on the small and medium sized farms, corresponds to more than 80 per cent. of the gross yield of agriculture. The total milk production, apart from what is used for cattle raising, was estimated at about 3,900,000 metric tons in 1925. Part of this was used at home in the form of whole milk, about 160,000 tons in the making of cheese and condensed milk for export, and part for cream. But by far the greater part of the milk, about 3,440,000 tons, is used for making butter. It is calculated that Denmark produced in 1925 about 141,000,000 kilograms of butter.

A total of about 3,766,000 pigs were slaughtered in the export slaughter houses in 1925. In addition a considerable number were slaughtered for domestic use, and about 130,000 live pigs were exported. The total production of pigs must, therefore, have been about 4,000,000 head, corresponding to an output of about 240,000,000 kilograms of pork. In addition there was an enormous production of byproducts consisting of heads, feet, hearts, lard, etc., all of great importance in meeting the costs of production at the packing plants. It is difficult to secure more than an approximate estimate of the amount of beef produced, as most of it is consumed at home. It is calculated, however, that the annual slaughtering and exportation of cattle and calves amount to about 1,000,000 head. The total production of beef and veal is estimated at about 140,000,000 kilos. It is further calculated that the egg output during 1925 reached 65,000,000 kilos.



At the farm of Laurits Lauritsen, near Silkeborg, Landrace and Yorkshire sows kept.

UTILISATION OF THE AGRICULTURAL AREA.

As mentioned elsewhere, when overseas competition in the production of grain began to be keenly felt some fifty years ago, Danish farmers began to concentrate on animal husbandry. They took advantage of this cheap foreign grain, whereas in other European countries the farmers demanded protection under customs duties against the introduction of cheap grain from America. Since that time Danish agriculture has increasingly specialised in animal husbandry, based upon an intensive cultivation of the soil and the importation of feeding stuffs. An effort is made to produce the greatest possible quantity of fodder, as

this, with mangold-wurzel and other roots, can be used with the greatest advantage if supplemented with imported cattle-cake. Therefore, the growing of wheat and other products for direct consumption, or for industrial purposes, occupies only a secondary place. There has been a marked extension of the potato and root-crop areas, while the fallow lands and grass lands have been reduced. The employment of the tilled area in 1925 appears from the following summary:

	Cultivated area in 1925 1,000 ha.
Grain	1,275
Seed	21
Potatoes and root crop	482
Fallow	109
Grazing and green fodder area in grass fields.....	867
 Total	 2,754

The chief aim, therefore, is the cultivation of land to produce cattle food. This appears even in the growing of grain from the fact that such a considerable area sown to grain may produce a mixed crop, chiefly of barley and oats, which can be used as fodder. The following figures show the utilisation of the grain area in 1925:

	1,000 ha.
Wheat	80
Rye	214
Barley	301
Oats	445
Mixed seed	227
Buckwheat, pulse	8
 Total	 1,275

A total area of 482,000 hectares was given over to the production of potatoes and root crop in 1925. These root crops consisted chiefly of potatoes, beet-roots, swedes, turnips, with the smaller production of sugar beets and carrots. Animal husbandry has, therefore, proved the salvation of agriculture in Denmark, particularly for the small and medium-sized farms. During the past fifty years the stock of cattle has also doubled, pigs have increased more than five-fold, and poultry more than four-fold. The following figures indicate the numbers of livestock on Danish farms in 1925:

Horses	536,000
Cattle	2,758,000
(of which milch-cows)	1,391,000
Pigs	2,517,000
Sheep	261,000
Poultry	20,093,000

SOCIETIES FOR THE PROMOTION OF DANISH AGRICULTURE.

It has already been stated that the small and medium sized farms are, on the whole, regarded as of most importance in Danish agriculture. By means of an extensive organisation which touches every phase of agricultural activity, these farms have been able to participate in many of the advantages of large-scale agriculture. In some respects, they have developed technical methods made possible only by co-operation. By a combination of the advantages of large-scale farming with the benefits which the small independent farmer enjoys, Danish agriculture has been carried to a point of development seldom attained in other countries. Along with this, is the important social and personal force of rural education, referred to in some detail elsewhere, whereby, some 8,000 young men and women secure the advantages of adult education.

The Farmers' Associations, the Small Holders' Associations and the Royal Agricultural Society all work for the promotion and general economic development of agriculture. There are 135 local Farmers' Associations with about 115,000 members, and 1,193 Small Holders' Associations, with about 84,000 members. Both these associations are organised not only locally, but in two great national organisations. Three great farmers' organisations, namely, the Co-operating Danish Farmers' Associations, the Union of Danish Co-operative Societies, and the Royal Agricultural Society have established a joint organisation, the Agricultural Council. The object in view is chiefly to represent the agricultural interests in their dealings with the government, with foreign countries and with other Danish industries. The extensive work of these associations for the promotion of field and animal husbandry, under the direction of expert advisers, their experimental research work, their livestock shows, etc., are all supported by government grants.

A large number of breeding societies and control societies have been established for the purpose of improving livestock by rational breeding and scientific feeding and rearing of the stock. There are 1,164 cattle breeding societies, with a membership of 28,800. There are also a number of pig breeding societies, although a considerable part of the work for the promotion of pig breeding is performed by the co-operative bacon factories. The principal object of the control societies is to definitely determine the profit and loss on cattle, by means of making careful study of feeding, milk yields, and the fat content of the milk. The object in view is to determine which breeds are most profitable under the conditions that obtain in Denmark. Just as important, perhaps even more important, work has been done in breeding and feeding problems, in connection with the production of the right type of bacon hog. As is well known, by building on the foundation of the native Landrace, and crossing with the Yorkshire boar, Danish farmers have succeeded in producing the finest type of bacon hog in the world.

EXTENT AND CAUSES OF DEVELOPMENT OF DANISH AGRICULTURE.

Danish agriculture has experienced a remarkable development, particularly during the past generation. Its characteristic features are

found in high productivity per acre, intensive farming, and concentration upon specialisation in the production of butter, bacon, and eggs. The agricultural achievements of Denmark are not matched by any other country in the world, area and population considered. In the matter of furnishing a high yield per acre Denmark has made astonishing and apparently enduring progress, for its farmers not only meet home requirements, but in addition export annually approximately 120,000 tons of butter, 200,000 tons of bacon, and \$,000,000 of great hundreds of eggs. If to these commodities are added the smaller farm exports of horses, cattle and meat, it will be found that 85 per cent. of the entire export trade of Denmark consists of the products of agriculture. This is a remarkable record, when the peculiar position in which



The C.W.S., Copenhagen.

Denmark finds itself with respect to area, quality of the soil, and other factors are considered. No other country has yet placed exports of animals and their products in so dominating a position; and notwithstanding the disabilities noted above, Danish exports of butter, bacon and eggs are greater than those of any other country in Europe.

The following data may perhaps make the above considerations somewhat clearer: In 1914, the last normal year before the war, Danish holdings of milk cows and pigs were the largest, from the comparative standpoint, of any country in Europe. For example, for each 100 inhabitants Denmark possessed 46 cows; Holland, 18; Germany, 16; and England 10. Of pigs, there were 88 per 100 inhabitants in Denmark, 33 in Germany, 32 in Holland, and 8 in England. It is evident that animal husbandry had therefore been carried to a high

stage of development, before the war; and it is also evident that animal husbandry had become fundamental by that period in the agricultural economy of the country. To carry its cows over the seven winter months, 15 per cent. of the total arable land is given over to the cultivation of roots; while at the same time there is a great and growing trade in the importation of oil cakes from the United States and feed stuffs from other countries. This oil cake importation amounts to approximately half a ton per cow per annum, which makes Danish agriculture the chief foreign market for American cotton-seed oil cakes. Moreover, in addition to imported feeding stuffs, such as oil cakes and maize, all field crop production was directed, in the planned Danish economy, to the support of the livestock industry. The objects sought in Danish farming were both quantity and quality of production, with the emphasis placed upon the latter. The result was that Danish butter, bacon and eggs found an ever increasing and profitable market among consumers in Great Britain and elsewhere.

As is well known, these far-reaching results were not achieved quickly, but followed years of preparation, and were based upon a well considered agricultural programme. Some fifty years ago Denmark produced and sold chiefly cereals, being in the same position as other European countries of the time which were on an export basis.

The pressure upon Danish farming due to the importation of cheap American wheat and other cereals into the European markets produced a crisis that for a time overwhelmed it by its severity. From 1880 on, it became increasingly clear to the Danes that they could not hope to compete on a profitable basis with the intensive wheat farming of the United States, the Argentine and other countries; and with that realisation there arose a determination to discover other outlets for the products of Denmark's agriculture. As is well known, the soil of the country, for the most part, is poor; the yields per acre for wheat and other cereals were small; and in addition Denmark had no great reserve of capital, no possibility of making an effective use of machinery to enable it to engage in wheat production in competition with the virgin lands of the new world. All these factors compelled the Danish farmers to make a readjustment of their agricultural activities, consisting chiefly in turning cheap overseas maize and, later, oil cakes into a source of profit, thus at one and the same time escaping from the menace of the competition of cheap foreign cereals while taking advantage of that very cheapness to build on firm foundations the country's livestock industry. Thus, American cereals and oil cake were imported as the raw materials for manufacturing the refined products of domestic animals, and placing those products wherever a profitable market could be found, more particularly in England.

The readjustment was rapid, but its success was not achieved until years of difficulties and many obstacles had been overcome. These hard years involved self-denial on the part of Danish farmers, which in the end wrought untold good. From personal observation, one discovers that the human material behind Danish agriculture is steadfast, high grade and disciplined, all of which qualities are due in no small part to the period of storm and stress through which Danish agriculture passed

while undergoing its reshaping. With the new direction given to its agriculture, with the substitution of animal husbandry for field husbandry as its chief economic interest, Denmark made remarkable progress, capturing new markets and finding new fields of employment for its people. During the past twenty years, notably, Danish agriculture has met with extraordinary success, both from the standpoint of quality production and volume, and profitable returns to the farming community.

As already observed, Denmark has no special advantages of soil, climate or other factors which in themselves could account for the dominant position she has assumed in the production of agricultural products for the British market. On the contrary, there are large areas of very poor light soil; and the winter period of seven months makes it difficult, from the feeding standpoint, to place its animal husbandry in a secure position. While the Danes do exhibit outstanding technical ability in feeding, breeding and processing livestock, yet one can discover equally good physical conditions in other countries. In the cultivation of the soil, in the raising of the standards of animal husbandry, in dairying and so forth, Canada can, in some instances, match the achievements of Denmark. The Danes have met with outstanding success in developing and carrying through a sustained programme of agricultural expansion on a quality basis. Mr. Madsen-Mygdal, former Minister of Agriculture for Denmark, in analysing the reasons for Denmark's success in profitably entering the British and other markets, places the emphasis upon the following factors: Competition, notwithstanding the extent to which co-operation is practised, has been made a cardinal feature of Denmark's national economic policy; farming is broadly based upon ownership: the farmers have been given access to cheap and abundant capital; the farm has been organised on the basis of family labour; and, above all, the driving force of co-operation has been harnessed and put to effective use in every phase of the country's agricultural industry. These factors require more emphasis than they have ordinarily received (save that of co-operation) at the hands of foreign observers. The Danes have boldly and courageously challenged the best that can be offered by foreign producers, and have relied upon the quality of their products, and the conditions of their production, to achieve success. As Mr. Madsen-Mygdal has well said, "Open competition is the salt of efficient production and trade": and while the farmers of the United States, of Germany, and other countries, have clamoured for more protection for agriculture, Denmark, relying upon personal initiative and enterprise, the application of science to agriculture, and, above all, hard systematic work, has forged steadily ahead. It is true that difficult conditions have obtained since the war; but these have been due chiefly to factors over which the farmers themselves have had little or no control. They have been the outcome of the altered economic policies which the war imposed upon Denmark and the other nations of Europe. Under normal conditions, Danish farmers believe that in quality and price they are able, without extraneous aid, to hold their own in neutral markets.

Denmark is predominantly a nation of freeholders, although as was the case with other European countries the line of development has been from tenancy to freehold. Some 150 years ago, tenants and leaseholders were the rule, but today they have practically, as an important factor, disappeared. Too much weight cannot be given to the influence of ownership upon increased production and quality production in Denmark; for along with ownership have come heavy investments in buildings, livestock, implements and fertilisers for the soil. It is calculated, for example, that on the middle sized Danish farms the total investments in buildings, livestock, etc., amount to approximately \$500.00 per acre; and in this investment, be it noted, the value of the soil itself is the least part. The old saying that "The possession of property turns sand into gold," is borne out by the "ownership" economy of Danish agriculture, where infinite labour has been lavished upon the land, and where the farmers exhibit pride in their vocation, and endeavour to fit themselves for what they conceive to be a worthy calling. All this is more or less incompatible with tenancy; at least no such enterprise is found elsewhere under tenant farming conditions in Europe. Along with these heavy capital investments has gone a policy, partly under State, and in greater part under private, direction, whereby agriculture has had the benefit of comparatively cheap money. As a rule when a young Dane buys land he uses his available capital to equip the farm, and looks to other sources for the funds to place him in possession of the property. Thus it has come about in Denmark that possession of the land in itself has involved relatively small capital outlays, funds being provided either by the State or under a co-operative and far-reaching rural credit plan. These relatively cheap loans, spread over a long period of time, have made it possible not only to put the small farmer in possession of land, but to break up the larger estates, and thus establish a truly agricultural democracy. A factor, in some respects more important than any other, making for Danish agricultural success, is what may be termed "the family economy"—an economy which is carried to a high point of perfection in Denmark. As is noted below, ultimate success in Danish farming, as indeed, elsewhere, rests upon the personal equation—upon the experience, training and enterprise of the farmers themselves. Under the direction of the father and mother, the children, when they have attained the working age, do their part on the farm, thereby receiving a practical education which is of untold benefit to them when in later years they acquire land of their own.

The larger farms are more successful in the production of cereals and seed than the small holdings; but cattle, pigs and poultry yield a much larger net return per acre on the small holdings, where close personal supervision of the necessary activities is possible. While some 15,000 small holdings have been purchased under State loan schemes since the first Act was passed in 1899, upwards of 120,000 small holdings have been purchased with private money furnished under the co-operative credit plan. Altogether there are about 200,000 independent freeholders in Denmark, and it is evident that, working by themselves without collaboration with others, little could have been

accomplished in securing the relatively high standard of living to which Danish farmers have attained. The conditions of success, in Denmark or elsewhere, in agricultural production, are found in securing the right human material for the land and in assuring the tiller of the soil a reasonable remuneration for his enterprise. To secure results in both directions, especially where small holdings are the characteristic features of the agricultural economy, there must be co-operation—co-operation to provide an outlet for latent human energy and ideals, and to make the labour and capital investment effective. By means of this collaboration and co-operation, the Danes have greatly improved the quality and increased the quantity of their production of butter, bacon and eggs, and have achieved results which were never realised on the large farms in days gone by. Co-operation has, in fact, turned Danish production on the farm into channels that deepen and widen, and gather



*Royal Agricultural and Veterinary College,
Copenhagen.*

almost irresistible force, as the united efforts of the farmers make their efforts felt. The farms become workshops in which highly finished products are produced, and in which an effort is made to turn out in each special direction, whether of bacon, eggs, cheese, an homogeneous product.

The training and education of the Danish rural youth are vital forces in making for Danish agricultural success. Between the years 15 to 20, the sons and daughters of the farmers obtain a practical education when working for their parents, or on other farms. As their parents in many instances have received a thorough practical and social training in the folk schools and elsewhere, they are in a position to guide the activities of the younger generation, and so it comes about that *students* make up the majority of Danish farm labourers. The student atmosphere is evident throughout the entire countryside, for the

boys and girls not only work, but are encouraged to think as they work, on the farms. Later they enter the Folk High Schools and the agricultural schools, and after several years' training therein are recognised as being fitted to take up farming on their own account. It is impossible to overestimate the importance of these high schools and the agricultural schools, in the development of Danish agriculture. The farmers of Denmark do not regard their education as "finished" when they leave formal school life behind. Through their many farm organisations and societies established for mutual help, they continue their education. By debate in these meetings, by the exchange of views, by the holding of exhibitions, they not only are kept in contact with the advance of science and technical improvements, but they make the fine fruits of scientific exploration and technical achievements their common possession. In addition, many technical advisers are available for agricultural guidance; and thus the application of science, together with the mighty force of a co-operative spirit, constantly tends to raise not only the technique, but also the standards of living, in Danish agriculture.

COSTS OF PRODUCTION AND PROFITS; METHODS AND RESULTS OF SURVEYS.

Professor O. H. Larsen, of the Royal Danish Agricultural College of Copenhagen, furnished valuable material, the outcome of extensive work on the part of himself and staff, on the problems of relating production costs to net profits. For the most part the data which form the basis of these researches are secured through the Agricultural Societies, but a number of farm accounts are also kept by accounting bureaus independent of these societies. Each accounting association is established as a special branch of the Agricultural Societies' activities in each county, and is supervised by an expert adviser in a manner similar to the scheme followed in providing experts to the Society to supervise the work of plant culture, animal husbandry, and so forth. It should be noted that almost all advisers are graduates of the Royal Danish Agricultural College, and are soundly grounded not only in theoretical knowledge but in practical experience derived from their activities on the land.

Investigations into Danish agricultural economies have been conducted from 1900 on; and just before the war these investigations became so valuable due to their scope and method that, during the years of war inflation which necessitated the exercise of keen business judgment, the farmers of the country as a whole became interested in them. Up to the year 1916 these researches were mainly an activity of the Agricultural Societies, but in that year the Royal Danish Agricultural Society, under the leadership of Prof. Larsen, investigated a plan under which farm accounts should be kept, compiled and supervised in a uniform manner. Following upon consultations between interested

groups, the Bureau of Farm Management and Agricultural Economics was established at Copenhagen, to continue the work of the committee in this important direction. The Bureau is under the guidance of Prof. Larsen, who is assisted by a deputy director, Mr. Ivar Dokken, and a corps of nine helpers. Moreover, the Bureau is still under the general control of the committee which represents the larger agricultural organisations, the Royal Veterinary and Agricultural College and the Statistical Department. Its expenses are met by a grant from the Government, which, in 1926-27, amounted to 50,000 kroner. On this relatively slight financial foundation the Bureau has carried forward important and significant researches; and it is expected that this work will be pushed still farther as additional funds warrant. The actual methods employed for securing such information as may be utilised for the improvement of Danish agriculture are comparatively simple. Responsibility, in the first instance, is placed directly upon the individual farmer, who must make daily entries in his books covering the essentials of his farm activities. The technical adviser, who is employed by the County Agricultural Society, makes a summary of the accounts and closes them at the end of the financial year. Usually the adviser has about 30 accounts to supervise, but in a few cases a larger number compels the employing of assistants. The adviser makes personal visits at least once a month to keep in close contact with the members of the association; and in this way he becomes more than a mere accounting expert—he becomes, in fact, an expert planner, an economic engineer, who may be relied upon by the farmer not only to secure the best combination of the productive factors, but to induce the farmers to follow methods that will give best results over a period of time. It is impossible to place too much emphasis upon the importance of the work of these technical advisers, who not only bring to the farmer information of a scientific nature for the betterment of his field crops and the improvement of his livestock, but who help him solve his problems in periods of crisis and difficulty. In making out the accounts two different forms, Form A and Form B, are used. The first takes cognisance of the farm enterprise as a whole, while the second correlates the different farm activities, such as the profitable production and use of horses, cattle, pigs, grain, roots and meadows, etc. To finance the expenses of this work, of which the most important item arises under salaries, State subsidies are granted when:

1. The system of accounting used is approved by the Agricultural Society of the district; and when
2. The accounts cover not merely special items but the entire business of the farm; and when
3. The results are revised, prepared and published for the good of agriculture as a whole.

Before the beginning of the new financial year a conference is held in Copenhagen at the offices of the Bureau, when the advisers are instructed in the essentials of the official accounting system; and when the principles of production and distribution are thoroughly analysed

and discussed. At the end of the financial year the Bureau receives the necessary number of accounts covering the activities of different sizes and types of farms. Careful analyses are then made of the data so secured, and all inexact accounts are discarded, only the carefully kept accounts being selected to elucidate those principles which, in their practical application, may be most effectively used in Danish agriculture. More specifically the data selected are examined to discover the average amount of capital, the gross returns, the working costs, the net returns, the interest on capital paid for the year, in the various types and sizes of farms. After these results have been secured, an attempt is made by analysing the material so classified, to discover which are the most important factors in bringing about certain results, and, more particularly, in which branch of agricultural activities greatest net returns are secured. Beyond question such an analysis of actual farming operations must yield valuable fruits, if care be taken to properly interpret and apply the lessons so learned.

It must not be supposed that each individual farmer can safely use the cost data for his particular type of farm, without taking into account management as the principal factor in production. All such studies are based inevitably on the assumption that, for similar types of farms, there is a similar degree of skill in their management—an assumption which may prove fatal unless the farmer takes into consideration not only the similar, but the dissimilar conditions, that prevail even for the same quality of land in his own community. Moreover, the farmer must not be led astray by any effort to secure for his products only a sufficient return to cover "average costs," for manifestly, in the same group, there will be producers both above and below the average production cost. Average costs are an abstraction, extremely valuable in themselves only when intelligently applied by the individual farmer when he is attempting properly to correlate the various factors of production. What is probably more desirable would be the working out of a policy which would result in securing a net price to cover "bulk-line" costs—that is a price sufficiently high to cover the expenses of the majority of producers.

From the material kindly furnished by Prof. Larsen, some salient facts bearing upon recent conditions in Danish agriculture may be presented here. On October 15, 1926, Professor Larsen issued the results of a provisional survey of Danish farm conditions for the year 1925-26. At that time the Bureau had received 270 out of an expected 700 accounts; and of these 200 were selected from which to make an analysis of the prevailing agricultural situation. For this purpose, they were grouped almost in proportion to the groupings that would be made later when the full number of accounts had been received, and were compared with the results secured from the analysis of 671 accounts of the previous year.

Prof. Larsen draws attention to the fact that the averages for the 200 accounts give a more correct indication of farm conditions than the average for any one of the smaller sub-groups. Referring to Table I. it will be seen that there is little difference in the agricultural capital

investments between the years under review, the increase in the value of livestock being due to higher prices for cattle, and also to an increase of the stock of cattle held on the farms. The percentage increase in the value of supplies is fairly large, and is occasioned by the higher prevailing prices of 1925-26; but the item of "supplies" carries little significance. Prof. Larsen states that for both 1924-25 and 1925-26 the book value of agricultural capital is considerably lower than the sale value, particularly with respect to the value of lands and buildings, but this applies also in minor degree to working capital as well. This difference is estimated to be as high as 27 per cent.



*Discussing the type of hogs with Mr. Kastoff, Manager,
Silkeborg Co-operative Bacon Factory.*

While the gross product of Danish farms was high in 1925-26, Table 2 shows a considerable decrease in the gross returns, i.e., in the market value of the total production. Taking all accounts into consideration the decrease amounts to 33 per cent. and is due chiefly to the rise in value of the Danish crown and the consequent fall in prices. In addition, Prof. Larsen draws attention to a considerable decrease in animal production following upon the outbreak of foot-and-mouth disease. This infection exacted a heavy toll from cattle holdings, it being calculated that almost one-third of the total number of farms suffered twice from the disease. In addition to this, moreover, there was a decline of prices secured for plant and animal produce up to June 1, 1926, amounting to 41.6 and 24.5 per cent. respectively for field crops and animals. The comparatively good bacon prices secured helped to stabilise the value of animal products, as during this period

TABLE I.—AGRICULTURAL CAPITAL IN CROWNS (KRONER)
PER HECTARE.

Size of farms (hectares)	Land and Bldgs.	Working capital				Agricultural capital—total	
		Live- stock	Imple. and Mach'y	Sup- plies	Total	1925	1924
Less than 10.....	2,494	703	291	47	1,041	3,535	3,462
10-20	1,999	550	232	54	836	2,835	2,677
20-30	1,999	535	212	60	807	2,806	2,691
30-50	1,875	484	159	51	694	2,569	2,500
50-100	1,793	432	130	62	624	2,417	2,297
100 or more	1,753	329	106	66	501	2,254	2,223
200 farms 1925	1,993	517	194	55	766	2,759	....
All farms 1924	1,979	472	196	44	712	....	2,691

the decrease in bacon prices was only about 15 per cent. It is important to observe that, compared with gross returns, the working costs showed a considerably smaller decrease, the average decrease of working costs for all farms during this period amounting to only 18.8 per cent. The heaviest decline in working costs was found in the cost of concentrates, which amounted to 42.9 per cent., while "other purchases" decreased 13.4 per cent., and labour and "other costs" (that is taxes, insurance, repairs, improvements, etc.) fell only 6 per cent. There was a slight increase in the cost of fertilisers, partly due to their larger use and partly to the fact that most of the artificial fertilisers were purchased early in the spring of 1925 before advantage could be taken of the decline in their price. It will be observed from a study of the figures presented in the table below, that the greatest percentage decline in working costs was found on the smaller farms, due to a comparatively

TABLE II.—GROSS RETURNS IN CROWNS (KRONER) PER HECTARE.

Size of farms (hectares)	Products from					Total 1925-26	Total 1924-25
	Crops	Cattle	Swine	Other animals	Sun- dries		
Less than 10	65	594	460	112	68	1,299	1,903
10-20	45	471	258	49	38	861	1,247
20-30	71	420	303	38	38	870	1,225
30-50	78	321	231	29	28	687	1,049
50-100	99	307	193	17	25	641	930
100 or more	185	273	95	6	25	584	809
200 farms 1925-26	82	400	267	43	37	829	....
All farms 1924-25	126	580	404	80	45	....	1,235

larger consumption of feed stuffs on the smaller farms, and due also to the fact that it is more feasible to reduce labor costs on the smaller than on the larger farms. In crowns per hectare the decrease of the working costs was not quite half the decrease in the gross returns, being 186 crowns and 406 crowns, respectively. Prof. Larsen states that, in spite of the excellent yield for the year under survey, poorer financial results are disclosed than for any previous year since the Bureau began analysing farm accounts.

The financial results disclosed by such a survey are perhaps the most interesting and important. Table IV. gives the net returns in crowns per hectare and in per cent. of agricultural capital. On the average for all farms the net returns were 26 crowns per hectare against 246 crowns for the year 1924-25, the percentage decrease being even greater than for the critical year 1921-22. The small farms gave the poorest results in 1921-22, but the figures for 1925-26 show that the net returns are decreasing with increasing size of farms. For farms over 100 hectares the returns have been reduced to 11 crowns, or 5 per cent. of the agricultural capital, while the net returns for the small farms provide only 1.2 per cent. on the agricultural capital booked. It is obvious that animal products and their prices played an increasingly important role with decreasing size of farms; thus a variation in the prices of cereals and other field crops as contrasted with changes in the price of animals and their products will have different effects according to the type of farm in question. It will be observed that, for the period in question, the average net returns on Danish agricultural capital (according to the outcome of Prof. Larsen's survey) made possible a yield of only .9 per cent. If this per cent. were calculated on the basis of the full sale value of the total capital

TABLE III.—WORKING COSTS IN CROWNS (KRONER) PER HECTARE.

Size of farms (hectares)	Labour	Con- cen- trates	Arti- ficial manure	Other pur- chases	Other costs	Total 1925-26	Total 1924-25
Less than 10	513	362	45	131	204	1,255	1,587
10-20	328	189	44	95	169	825	994
20-30	318	221	47	86	169	841	965
30-50	269	139	43	69	145	665	822
50-100	245	107	58	65	151	626	732
100 or more	231	104	50	53	135	573	634
200 farms 1925-26	319	190	47	84	163	803	..
All farms 1924-25	341	333	44	97	174	..	989

it would be only .7 per cent. The general conclusion might be drawn that for the year 1925-26, for Danish agriculture as a whole, scarcely any net returns were available to pay interest on capital invested.

Table IV presents a complete summary of the financial results secured in 1925-26. From the data presented there it will be found that labour earnings of the family, for the small farms and especially

TABLE IV.—COMPLETE SUMMARY OF THE FINANCIAL RESULT.

Size of farms (hectares)	Crown per hectare			Net returns 1925-26			Net returns 1924-25			Actual labour earnings of the family	
	Agri. capital	Gross re- turns	Work- ing costs	Crowns per hect.	In % of agric capital	Crowns per hect.	In % of agric capital	Crowns per hect.	In % of agric capital	Crowns per hect. 1925-26	Crowns per hect. 1924-25
Less than 10											
10-20	3,535	1,299	1,255	44	1.2	316	9.3	273	9.3	553	553
20-30	2,885	861	825	36	1.3	253	9.5	46	4.6	273	273
30-50	2,806	870	841	29	1.0	260	9.7	—	—	226	226
50-100	2,569	687	665	22	0.9	227	9.1	—	—	176	176
100 or more	2,417	641	626	13	0.6	198	8.6	78	7.8	129	129
200 farms, 1925-26	2,254	584	573	11	0.5	175	8.0	91	9.1	72	72
All farms, 1924-25	2,759	829	803	26	0.9	246	9.1	—	—	20	255

the farms under ten hectares, were extremely meagre. Prof. Larsen calculates that on these small farms the actual labour earnings of the family were from 30 to 40 per cent. below the calculated normal remuneration, corresponding to the amount which the family could have earned in the year if its members had been working for the same number of hours for other farmers at the going wage. For the year 1924-25, however, the labour earnings for this type of farm were almost as high above the calculated normal remuneration as estimated above. There were, according to the statistics presented, no labour earnings during 1925-26 for the middle-sized and large farms. If one calculated on securing a return of six per cent. on the capital invested, the actual labour earnings for the family would amount to an average, for all accounts, of 20 crowns per hectare. It will thus be seen that due to readjustment of credit, currency and prices in the post-war period, Danish agriculture has had many difficulties to overcome.

THE ECONOMIC UNIT OF DENMARK.

Dr. A. G. Ruston, of the Department of Agriculture, Leeds University, England, has done valuable work in connection with the making of cost studies in Great Britain and on the Continent. Using Prof. Larsen's figures for the years 1917 to 1923, he reaches interesting conclusions as to the most economical unit for Danish agriculture, and attempts to apply the results to a possible solution of the social and economic problems in agriculture in England. He reaches the conclusion that if the time should come when Great Britain must, as far as possible, be self-supporting as far as her food supplies are concerned, the small holding will play a decisive role. In studying the variation of gross output with the size of the farm Dr. Ruston finds that for the years 1917 to 1923 the gross output for farms of 25 acres and under amounted to £20-1-0, while on farms of over 250 acres the gross output amounted to only £12-4-0. He concludes that Prof. Larsen's figures for these years show that the small holding, unit for unit, is socially the best—that is in terms of gross output. It is evident, however, that the individual farmer will regard this problem not from the social, but from the personal, point of view; the economic rather than the social aspect will make the most telling appeal. Farming, as a business proposition, means the making of a good living; and from this point of view Prof. Larsen's figures are most instructive, for they do not demonstrate so conclusively, at least for the period in question, that the small holding of approximately 20 acres, so common in Denmark, is the most economic unit. As Dr. Ruston shows, such a farm is handicapped by high capitalisation, particularly in the form of non-productive capital; it is also handicapped by high working costs, by the difficulty in securing the economic employment of both human and animal labour, and handicapped to such an extent as to practically overbalance the social advantages accruing to that type of holding. Dr. Ruston finds the total capital invested in land, buildings and in

working capital, per acre, for farms under 25 acres, to be £55-10-0, and for farms of 250 acres and over £39-17-0. Thus it follows that in the case of the small holding under 25 acres the total capital invested in the farm is approximately three and a half times the value of the land, and in the case of the holding of 250 acres, approximately only twice the value of the land. The wages bill is much higher per acre on the small holding than on the large farm, the wages per acre for 25 acres and under being calculated at £8-12-0, as compared with £4-2-0 on the large farm. As Dr. Ruston points out, it is unfortunate, too, that on the small holdings such a relatively large part of the capital is made up of non-productive capital in the form of buildings, implements and other dead stock, which are not likely to be used as effectively as on the large farm. The percentage of capital in non-productive, or in non-liquid form, on the small holding is 42, decreasing as the size of the farm increases until it stands at 31 per cent. for farms of 250 acres and over. From the social point of view it is the gross output in the terms of bushels, pounds, etc., that is important; but from the individual standpoint, it is the net return from the sales of farm products that counts; in other words, the margin between production costs and prices realised on the sale of farm products. Taking into account the capital invested per acre, the output in terms of value per acre, the cost of upkeep per acre, the net return per acre, and the normal interest on capital invested, Dr. Ruston finds that for the period 1917-1923, on Danish farms of 25 acres and under, there was a net loss of £0-4-0; on farms from 25 to 50 acres a balance per acre of £1-3-0; on farms from 50 to 75 acres, a return of £1-7-0; on farms from 75 to 100 acres, a return of £1-10-0; on farms of 100 to 250 acres a return of £1-3-0; and on farms over 250 acres a balance of £1-0-0. Dr. Ruston maintains that there is, on broad general lines, an almost uniform agreement in this respect between the results obtained by Prof. Larsen in Denmark, Dr. Laur in Switzerland, and those which he has obtained from a more detailed study of a smaller number of farms in Yorkshire. In none on these cases was the small holding of 30 acres, which is so common on the Continent, found to be the most economic unit. It is significant that, after allowing for normal interest on the capital invested in the holding, and providing payment for the labour of the small holder and his family, there was during the seven years in question an annual deficit of 4 shillings per acre on the small farms of 25 acres and under. It is noticeable that the economic efficiency of the farm increased with its size, until farms of between 75 and 100 acres were reached, on which a surplus of 30 shillings per acre was obtained. After that point the returns per acre progressively decreased. Dr. Ruston argues, and supports his argument with the records of Dr. Laur and Prof. Larsen, that men on the smaller farms would be in a better position if they abandoned the land and worked for wages. He does not lose sight of the fact that many men prefer to work for themselves, even if by so doing, they sacrifice something; and adds that this spirit of independence is something to be encouraged and fostered.

Dr. Ruston draws attention to the fact that the small holder in Denmark relies almost entirely upon the sales of animals and their products for his revenue. It is in the management of animal husbandry that the skill of the small holder finds an outlet; for undoubtedly Danish success in producing butter, eggs and bacon rests largely upon the individual attention which the farmer gives to his poultry and livestock. On the other hand, the small farmer in Denmark suffers heavy handicaps through overstocking horses, and because of the difficulty he meets in making adequate use of machinery. Dr. Ruston states that in Denmark the small holding of under 25 acres is nearly four times as heavily stocked, proportionately, with horses, as the large holding of over 250 acres. On the other hand, more careful use is made of feeds, and more careful attention is given to livestock and to buildings on the smaller farms. It is calculated, however, that on the smallest Danish holdings horses are worked per head only 94 days a year, while on the largest farms they are worked 212 days. The wonderful skill of the Danish farmer is disclosed in the fact that, in spite of the small number of days his horses are working, the cost of horse labour during the period 1917-23 was only 36 cents per working day more than on the large holdings where the horses were kept busy. Prof. Larsen also shows the great value of individual attention in reducing costs in the handling of poultry and pigs. The small holder stocks his land heavily with poultry, and watches his feeding closely, making a considerable saving per unit as compared with the expenses per unit of holdings over 250 acres, where swine and poultry are taken care of by hired labour. Taking the averages for the period 1917-23, Prof. Larsen's analysis shows that the number of food units fed per pig were 509 on farms under 25 acres as compared with 618 on farms of 250 acres and upwards; that the proportion of food fed per pig was 62.6 per cent. meal, 22.5 per cent. milk or whey, and 15.9 per cent. coarse fodder, on the small farms, as compared with 75.8 per cent. of meal, 17.8 per cent. of milk or whey, and 6.4 per cent. of coarse fodder on the farms of 250 acres and upwards. The labour bill per pig was 19 shillings for the small holdings and 13 shillings for the large farms, while the profit per pig was 12 shillings in the one case and 3 shillings in the other. From all the above it may be deduced that Danish agriculture as a whole has not yet established for itself the most profitable economic unit of production. On the other hand, it has demonstrated in the most telling fashion the supreme importance which individual care and attention play in the profitable production of livestock and its products.

SECURING QUALITY AND ECONOMY OF PIG PRODUCTION.

The Danes early realised that it was essential to produce a type of pig that would yield bacon of the highest quality suitable for the British market. The methods followed have been so often described that attention will be directed to more recent procedure in maintaining quality and reducing production cost. Breeding efforts were first centred upon perfecting a domestic breed which combined hardiness, size, build, and production of milk, with securing large and healthy litters. Also the

native Landrace, crossed with a white Yorkshire breed, was used to provide foundation stock which would produce a superior animal. This method has been pursued in Denmark up to the present time. Swine breeding centres were established throughout the country to which financial aid was granted by the Department of Agriculture. To secure the government grant the animals in the respective breeding centres were obliged to be placed under the control of the committee of an agricultural society, for at least one year. The farmers enthusiastically supported the various schemes for improving the quality of the breeding stock, and this explains in large measure the success attained in marketing Danish bacon in Great Britain. Along with the establishment of co-operative pig breeding societies, experimental feeding stations were



The type of Lorry used for collecting hogs.

set up to attack the problem of economical feeding. It seems fair to say that the success of the co-operative bacon factories and of the various marketing agencies has depended primarily upon the improvement of the breeding stock of the country. The farmers have learned to rely upon expert advice, whether in breeding or in operating the co-operative curing plants, to the end that they may devote their entire energies to the problems of economical production on the farm. It may be said in a word that the Danish rural community has been educated up to the point of trusting experts whose advice may be considered authoritative on scientific aspects of agriculture, while the producers themselves devote their energies chiefly to securing the most effective type of farm management.

So rapid has been the advance of the science of genetics in recent years that the early Danish experiments, remarkable as they were for their time, now appear primitive. The scientist is learning how to secure the transmission of heritable characteristics in livestock, and to pass this information on to the practical breeder. Nevertheless, no unit standard in the production of any kind of farm livestock has yet been achieved. Mere production is only one aspect of the standard desired, there being many other factors to be taken into account. Nevertheless, scientists and practical breeders realise that any sane standard of production is better than none. Standards must be established even though they are not definitive, so that breeders may work toward the most desirable type. Professor H. R. Davidson, School of Agriculture, Cambridge, and Professor A. D. Buchanan Smith, Animal Breeding Research Department, University of Edinburgh, have, among other scientific investigators, devoted careful study to this problem. They state that the greatest progress in breeding practice within the past fifteen years has taken place in improving the dairy cow and the laying hen, the products of which are subject to simple yet accurate measurement. Other countries are beginning to learn from Denmark that it is essential to establish a standard pig because it, next to the dairy cow, is the most economical producer of food. Work along these lines is being undertaken in Great Britain and in many other parts of the world. In Great Britain several breed societies have already adopted methods of advanced registry, or of more detailed pedigree registration, which is considered a logical step in the evolution of animal breeding. A great impetus was given to British breeds of livestock, as is well known, by the establishment of herd books, and its effects are felt in the market for pedigree stock. In the early days of this development, every local market had its peculiarities, and the breed was controlled to suit that need. Today the operation of economic law has eliminated the majority of minor bacon types, and it is recognised in Great Britain that breeders and commercial farmers must concentrate upon the production of three or four types of bacon pigs in order to meet the requirements of volume and quality which the modern market demands. The authorities above mentioned advance the opinion that the time has arrived in Great Britain to add to the value of pedigree by recording the productivity of the pig. The problem may be stated in this way: pedigree involves the attempt to produce something higher than the average, but a pig with a record implies that it has actually achieved something higher than the average. As has been pointed out by Professor Davidson, any adequate system of advanced registry in pigs really rests upon an accumulation of facts arranged according to a definite scheme, covering such matters as the growth of the animals in general and of certain animals in particular. The object in view is to secure the right type of pig. A science of this kind must employ tools, particularly weighing and measurement, tools of basic importance wherever accurate scientific work is attempted.

Denmark already originated the science of pig testing, as it is at present understood. The first tests relating to thriftiness and quality were made in 1896, and were carried out on the farms of the breeders. The first testing station was opened in 1907, and since that

time two more have been established. Sometime previous to the introduction of testing, the government had instituted a number of subsidised breeding centres. There was strict supervision of the herds at these centres by state officials, and very full information relating to the breeding capacity of the stock was obtained by means of private herd registers. The important fact for Canadian producers to understand is that the type testing station added to this breeding information details of the carcass quality, as well as information with respect to the economy of food consumption. Because of the small size of Denmark, and the intelligent way in which the breeding centre scheme was organised, the commercial farmers were able to secure their stock from the breeding centres. In other words, breeding was given over to specialists, while the farmers devoted their labour and capital to the economical and profitable production of pigs on a commercial basis. The livestock authorities were able to exercise considerable control, in this way, over the fecundity, quality and thriftiness of the commercial pigs used throughout the country. It is of the highest importance that Canadian farmers should adopt some similar plan, under which specialists will devote their attention to breeding and feeding problems, while, on the other hand, the farmer can concentrate upon the economic aspects of his undertaking. As has been stated by Professor Davidson and Professor Smith, Great Britain, although she has accomplished remarkable results in other directions in the livestock industry, has not placed herself in a position to secure such detailed breeding information as is collected by the private registers of the Danish breeding centres. Neither in Great Britain nor in Canada is the supply of commercial pigs as closely related to well bred animals as in Denmark. Such testing as has been done in Canada, at the agricultural colleges and experimental farms, has not as yet affected in any considerable degree the commercial stock of the country. It may be added that the authorities quoted above are of the opinion that Denmark has not made as full use of the available data as appears possible. While the Danish authorities publish periodically very full reports, and present tables in which can be found every measurement and award concerning each pig, the figures have been useful chiefly for the comparison of individual pigs in a herd, or for comparing one herd with another. Little has been done by way of analysing the total results as a whole, concerning which further research should be undertaken.

Sweden, among other nations bordering on the Baltic, has also concentrated upon bacon production in recent years. While that country, owing largely to its greater size and climatic conditions, has not developed the industry to the extent obtaining in Denmark, nevertheless, it has made significant progress. It should be observed that Sweden is fully aware of the value of applying science to its livestock industry, and has undertaken valuable work in connection with the testing and recording of pigs. It has established a type testing station at Astrop in the Province of Scania, the southernmost part of its territory. This station was modelled very closely upon the Danish one, and although only completed in 1923 it has already issued interesting and instructive reports. The methods followed are similar to those employed in Denmark, and the information is tabulated in much the

same way. The predominate breed in Denmark is the native Landrace, but in Sweden over eighty per cent. of the pure bred pigs are Large Whites, mostly imported from Great Britain. It should be observed that the total number of cases examined will increase year by year, so that the findings of the testing station will become increasingly valuable as the years pass by. Sweden will then have definite figures which may be used as a basis for establishing pig production on the most economical basis. Already important comparisons have been undertaken from the point of view of measurement of length of carcasses that go to make up the qualities of the three grades of Swedish bacon. The importance of length has always been recognised in bacon production, and Sweden is securing standards that will give producers definite guidance in production. In addition to length, some striking comparisons have been made between the measurements of the back fat. This is a measurement which can be easily taken. The average thickness of all the tested animals placed in Grade I was only 1.43 inches. The fact that even in Grade III the back fat was only 1.80 inches appears to indicate that sides with more than 2 inches of fat are not considered good enough to be exported from Sweden. It is not necessary to go into further details to prove the importance of employing scientific methods at testing stations with a view to formulating a definite and comprehensive pig programme. It is obvious, however, that scientific results of this nature cannot be quickly applied to the commercial aspects of the pig industry. To overcome this difficulty, Sweden has established pig recording societies on lines somewhat parallel to milk recording societies. It is interesting to note that the main part of this work is carried out by the milk recorder, who keeps accurate records of litters, weight of pigs, rate of growth and so forth. Returns of this nature can be applied with good results in raising the general standards of commercial pig production.

Denmark, in truth, has given the lead in applying scientific methods to the breeding, feeding, and profitable production of pigs. Other pig producing countries, such as the United States, the Argentine, South Africa, Australia and New Zealand, are making efforts to improve grades and qualities by means of scientific research. The Dominion Department of Agriculture is fully alive to the importance of pig testing and the utilisation of advance registry methods. It is difficult to establish testing stations in Canada, however, because of the vast extent of the country and the varying effects of geographical conditions on pig production. It would require a comprehensive programme in this country to secure the necessary essential information regarding breeding, feeding and management as modified by varying geographical factors.

Because of this fact it would appear that a scheme based upon pig recording should first be evolved, before testing stations are established. Owners of pure bred pigs of any recognised breed could apply for entry, and an inspector could make the necessary detailed examination of the

herd at stated intervals. It is not necessary at this point to enter into a further discussion of the problem. Sufficient has been said to indicate the fundamental importance of the work undertaken in Denmark by utilising the resources of science and the training and knowledge of experts in improving the economic position of primary producers.

CHAPTER III.

DANISH AGRICULTURAL CO-OPERATION.

As already observed, sound planning and the inauguration of a consistent economic policy have revolutionised Danish social and agricultural life. Denmark is, today, perhaps the foremost nation in the world with respect to scientific production and marketing. During the past generation, at least, the rural population has, for the most part, been prosperous, and has notably raised its living standards. In Denmark there are no extremes in wealth, the average standards of living being excellent in the country districts. Danish farmers have taught the farmers of other nations what can be done by using correct methods of cultivation, by maintaining and improving the fertility of the soil through the use of fertilisers, and by the intensive development of animal husbandry. The basic factor in improving the economic position of agriculture has, undoubtedly, been the introduction of democratic co-operative principles. Under the driving force of co-operation the farmers of Denmark in 1913 had command of 27.9 per cent. of the international butter trade, and controlled from 40 to 50 per cent. of the total exports of butter, bacon and eggs sent to the United Kingdom. In addition a large business was done with other countries in meats, horses, seeds and other farm products.

Although the first important steps by way of organising Danish agricultural life on a co-operative basis were taken in the eighties, a beginning had already been made with the establishment of co-operative credit associations in the fifties, and of consumers' co-operative stores in 1866. The first co-operative creamery was organised in 1882, and the first bacon factory in 1887. From the beginning, the importance of securing a standard commodity of uniform quality was recognised, along with the need of an efficient system of distribution. Thereafter the co-operative movement spread rapidly, until finally 205,000 farmers were organised on a collective selling basis.

It should be observed that two chief groups of co-operative organisations were launched in Denmark. The first, consisting of agricultural societies, comprised 90 per cent. of Danish farmers, organized to make the best possible use of technical, scientific and educational facilities; the second, consisted of co-operative associations organised for the specific objects of marketing farm products on a commodity basis, for purchasing farm supplies collectively, and to make available to all producers essential agricultural credit. These ventures met with such success that at the present time upwards of 85 per cent. of Danish farmers are connected with co-operative creameries and bacon factories alone. In 1885 there were only 250 co-operative associations, but by 1920 these had grown to approximately five thousand, while the volume of business had increased from 10,000,000 kroner to upwards of 1,500,000,000 kroner. The average volume of business of each local association has steadily increased from 1900, leaving out of account

the demoralisation of the export trade during the war years. Thus, by relying on their own efforts, the Danish farmers have revolutionised social and economic conditions in rural Denmark. All this would have been impossible had it not been for the important land reforms, the improvement of educational facilities, and other factors which promoted the right conditions under which co-operation might be made effective.

As noted elsewhere, this remarkable change has taken place in a country with few material advantages. The area of Jutland and the islands of Denmark is only 16,608 square miles. The soils of East Jutland and the islands are fairly fertile, but over wide areas the land is poor and sandy. Denmark lies between the North Sea and the Baltic, which gives it a climate in many respects similar to that of England. The winter weather is mild, and the summer weather is cool; the annual rainfall averages 25 inches, but the rains come at the right time to benefit the crops. The productivity of the soil has been greatly improved during the last twenty years with the introduction of scientific methods of culture, the use of manures, and especially the use of commercial fertilisers.

THE NATURE OF DANISH AGRICULTURE TODAY.

Danish agriculture today is characterised by great uniformity, which applies to crop production as well as to the animal industry. Crop production is uniform with the exception of a few districts where some farmers specialise on the growing of seed, sugar beets, or in horse raising. On the majority of Danish farms the primary objects sought are the keeping of dairy cows, growing the bacon type of hog, and raising chickens. In modern Danish agriculture, dairying plays the leading rôle. The land is utilised for the growing of forage, roots and grain crops for feeding purposes. Only on the large estates is there a surplus of grain for sale. About 66 per cent. of the total land area of the country is under actual cultivation. In the statistical survey of 1919, 37.2 per cent. of the cultivated area was used for growing grain; 40.7 per cent. for grass and related crops; root and potato crop utilised 13.6 per cent.; and other crops 1.3 per cent. The fallow area took up 4.4 per cent. of the arable land, and 2.8 per cent. was used for gardens and farm buildings. According to the last official survey, there were only 1,335 farms with an acreage of 296 acres and over; but their aggregate acreage made up only 9.8 per cent. of the agricultural land of the whole country. There was another group of 4,039 large farms where the average acreage was between 148 and 296 acres. The middle-sized farms, however, are the most important; 66 per cent. of the total agricultural land area is in these farms, varying from 24.7 to 148 acres. By far the larger number of these farms have an acreage between 50 to 60 acres. It was found that there were 109,145 small farm holdings of from 1.36 to 24.7 acres. While this group of farms comprises more than 50 per cent. of the total number of farms, its aggregate area amounts to only 13.6 per cent. of the cultivable land area of Denmark. Some 15,000 to 20,000 of these farms have an acreage of between 20 and 25 acres and thus might be classified with the group of middle-sized farms. The small holder usually occupies a piece of land ranging from

8 to 18 acres, although the tendency in recent years is to increase the acreage, so that the farmer may make an independent living for his family with his cows, pigs and chickens, and the growing of feeding crops. The small holder with only a few acres usually works part time on the larger farms in his neighbourhood, which adds to his income and also provides good farm labour to the community. There is considerable family labour on these farms. Many of them have been purchased by borrowed money, provided either by a state loan or from a co-operative credit society, at low interest rates on a long-term basis.

THE PRINCIPLES OF DANISH CO-OPERATION.

Whether or not the principles established in Denmark for the furthering of co-operative activities could be adapted to Canadian conditions, it remains true that the Danes have achieved astonishing results in their application. The Danish system has developed quite independently of the state, and quite free from any political, religious or class-conscious points of view. These co-operative societies have received no financial aid from the state, except in the case of breeding associations for livestock improvement. The co-operative organisations are supported and developed on the basis of common economic interests. By education, by discussion, by investigation, an intelligent membership has been built-up, possessing a clear understanding of the meaning, and also of the responsibilities and value, of co-operation. The Danish educational system, with its folk schools and agricultural colleges, has been a powerful agent in informing farmers and their sons on the basic principles involved in successful co-operation. The general rule is to launch no co-operative organisation until a sufficient amount of patronage is assured to enable it to operate economically and efficiently. It should be carefully observed, also, that the control of volume is regarded as important only for the purpose of efficiency and economy, since in no respect is monopoly the goal of the Danish rural community.

The co-operative associations are unincorporated, as there are no statutes in Denmark providing for their formation. Therefore, they are voluntary associations based upon what may be considered common law principles. The constitution of the association states its purposes, defines the methods of operation, and also the rights and obligations of the members. These articles of association constitute contracts between the association and its members which are enforceable in the courts.

The liability of the members for the debts of the association is personal and generally unlimited; but such debts, in practice, rarely occur. In the case of creameries and local purchasing associations, the liability of a member for the debts of the association is unlimited. In the event of debt, an equitable contribution is expected from each member. Some co-operative creameries, and other local commodity associations, dispose of their products through a sales organisation. In such cases the liability of the locals for the debts of the sales organisation is limited to certain fixed amounts. In some instances the liability of an individual member increases as his patronage increases.

BOARD OF ARBITRATION.

A remarkable and important development in most Danish co-operative centres about the settling of disputes arising between individual members or between the local associations and the central. These disputes and disagreements are settled by a board of arbitrators, and can not be taken into the courts of the country. Claims of third persons, of course, against an association may be settled in the courts. The constitution and bylaws signed by members of co-operative bacon factories specify that all disputes and differences, except those concerning debts, that may arise between the individual members and the co-operative, and between the local and central, shall be settled by such a board. The constitution and bylaws signed by members of co-operative creameries ordinarily include a clause stating that any member who fails to deliver his milk may be required by the courts to pay a reasonable sum covering the loss due to his failure to make delivery.

FINANCE: COMMODITY BUYING AND SELLING.

The Danish co-operative marketing and purchasing associations are usually nonstock organisations. The fixed and working capital is provided by loans, which are guaranteed by the members. In the local associations, individual members pledge their guarantee jointly against all debts incurred; in the central association, each local pledges its guarantee only for a definite amount. In the latter case, the members individually sign, or authorise the local board of directors to sign, the guarantee pledge for them. This certificate is then forwarded to the central association to be used for raising the funds necessary to carry on its operations. Within the local association the liability is apportioned, usually, according to a member's patronage. Within any group of farmers where there is a degree of personal acquaintance, joint liability is assumed; but when the activities of the co-operative extend beyond the community the farmers are unwilling to assume joint liability, unless the guarantee is limited. This method seems to be well adapted to the Danish credit system.

The Danes have organised on a commodity basis both for buying and for selling. There is always a strong local development, in which there is democratic control. The credit co-operative associations also have almost always been built around the locals. It was in response to a felt need that the local associations federated into district, and finally into provincial and national associations, along commodity lines. Nevertheless, the great associations functioning today started from comparatively small beginnings.

Whatever the stage of development may be, whether the association embraces the entire nation or only a district, the contract agreement is made through a local association. However, when the local decides to become a member of the central association, its individual members must agree to the contract conditions as required by the central association. The Danish Farmers' Co-operative Association for Seed Growers operates on a somewhat different plan; in this organisation there is a contract agreement between the central and each individual member.

Both the locals and the central co-operative associations bind the members through their contracts to deliver the total production of the particular commodity in question, except what is required for home use. In the case of purchasing associations, members must contract to purchase their supplies from the association for a definite period.

The duration of the contract period varies with the nature of the commodity handled, ranging from one to twenty years. The co-operative creameries have a contract compelling delivery of the product for a period varying from 5 to 20 years, but usually the contract period is for ten years. With co-operative bacon factories the contract holds for five, seven, or ten years; with cattle export associations, three years; with co-operative butter export associations, one year. The contract in the co-operative egg export associations is for one year with three months' advance notice required for withdrawal at the end of the fiscal year. Co-operative purchasing associations have similar contracts, requiring consumers to purchase necessary supplies for a definite period: five years with the feeding stuffs associations, ten years with the fertiliser associations, and five years with the cement and coal associations.

The usual rule is to operate the co-operatives on a pooling basis. Each member's product when assembled is classified, as to quality and grades, by the association. According to the classification made, a partial payment is remitted to the member on, or soon after, the delivery of the product, and the balances paid at the end of a stated period. The quotations of the different producers' associations usually are the basis upon which initial payments are determined. For example: When a member delivers hogs to a bacon factory, the first payment is made a few days after the hog is slaughtered and has been classified as to weight and quality. This partial payment is based on the weekly quotation set by the association, and is usually about 90 per cent. of the market value of the hog. The balance is paid at the close of a 6 or 12 month period. The same procedure applies to creameries, egg and butter marketing associations. These principles are common to all forms of Danish co-operation, but vary in their application according to the way in which the commodity and the nature of the specific industry are developed for each type of co-operative enterprise.

CHAPTER IV.

THE DANISH BACON INDUSTRY.

ORIGIN AND EXPANSION OF THE INDUSTRY.

Bacon stands second only to dairy products in the sum total of Danish exports. In 1913, approximately 272,000,000 pounds of Danish bacon were exported to Great Britain, consisting almost entirely of Wiltshire sides with ham and shoulder attached. About 98 per cent. of the total Danish bacon export goes to Great Britain, making 51 per cent. of the total British imports. The war seriously affected the Danish bacon trade with Great Britain, so that in 1918 only about one-fifth of the normal swine production of the country was taking place; but since that period Denmark has overtaken the pre-war figures. The official census of 1914 showed that the country had a pig population of 2,497,000, whereas in 1918 this had declined to 513,012. The submarine campaign during the period of hostilities seriously reduced the importation of feedstuffs; and production of swine was further curtailed by the small cereal and root crops of 1917. Production of pigs, however, increased rapidly after the close of hostilities, responding to improved trade conditions with England; by 1921 the restoration of free trade, and good bacon prices, together with lower prices for United States corn, gave much encouragement to the industry. In 1922, Danish bacon exports amounted to 247,000,000 pounds, practically equal to the pre-war figures. It was all the easier for Denmark to regain its position in the British market because the quality of its products had been jealously maintained, whereas, to meet the urgent requirements of Great Britain during the war, competing countries had frequently delivered an inferior product.

There were three important phases in the development of the Danish bacon industry: First, the adoption of scientific swine breeding; secondly, the great expansion of the dairy industry, which yielded as by-products skim-milk, butter-milk and whey; and thirdly, the introduction of co-operative bacon factories. Up to the year 1887 the Danes produced swine chiefly for the German market, and from that date to the present, for the British market. Between the years 1881-1885, 287,100 live hogs on an average were exported annually to Germany. These were of the heavy, fat, lard type, characteristic of the Danish native breed of that time, and for which there was an active demand from German importers. In order to stimulate agricultural production in Germany, however, the German government imposed heavy duties on Danish live hogs, and at different periods actually prohibited their importation. In 1887 it became evident to the Danish farmers that to save the swine industry, they would have to turn to the British market, Germany having raised insurmountable trade barriers against them. To take advantage of the British market, however, meant a radical change in the type of pig produced. Some 20 years previously

Hamburg buyers had offered higher prices for the lighter weight hogs produced in Denmark, which after processing, were exported to Great Britain. This demand for the bacon type hog stimulated the business of breeding to meet the demand. In the seventies and the early eighties several private bacon factories had been built in Denmark whose product interested the British market. Thus, when in 1887, the Danes were forced to meet a new problem of production, as well as of marketing, it was found that some beginning had already been made as a basis for the future expansion of the bacon industry. The available plants, however, were small, since they drew their supplies from somewhat narrow territories. To overcome this handicap, the private plants imported Yorkshire boars for crossing with the native breed, so that



Sonderborg Co-operative Bacon Factory, Denmark.

an increase of the bacon type pig might be secured. This experiment met with much success, and was duplicated at different points throughout the country, to the great improvement of the Danish pig breeding.

Denmark has met with the most conspicuous success in the co-operative management of bacon factories of any country in the world. These slaughtering and curing plants are controlled by producers in their own interests, without, however, losing sight of just treatment of consumers. For the most part the plants concentrate upon hog slaughtering and bacon curing, other livestock being processed chiefly for the making of sausage. An important point to observe is that the packing industry in Denmark is not centralised, as in the United States and Canada; Danish plants operate in a comparatively limited territory, and serve the requirements of, on an average, about 3,600 producers. As already observed, the Danish swine industry not only owed its inception to, but rests today, upon dairying development. In the early eighties

when dairying became important, skim-milk and other by-products were returned to the farms, and this led to plans for their economical utilisation. As, however, there were only a few private bacon factories, the need for further facilities was keenly felt throughout the country, as many sections were entirely bare of such facilities. It should be observed, therefore, that the Danish co-operative movement in the construction and control of bacon factories was not launched to displace a system of processing which had already developed, but rather to meet an urgent need which could not otherwise have been satisfied.

At that early period the farmers had met with little success in shipping their pigs to the few private plants in the country; first, because of the difficulties of transportation over long distances; secondly, because of the wide margins asked by local hog buyers; and thirdly, because the private plants could not get a sufficient number of hogs of the bacon type to permit them in turn to pay profitable prices to primary producers. The urgent need was for a regular supply of pigs of a high quality, and of the bacon type which the English market demanded. Thus, even at that comparatively early date it was soon realised that success in the industry depended primarily upon the producer. These difficulties were first frankly faced by the farmers in the vicinity of Horsens; and the co-operative idea in bacon production was first successfully applied in that community in 1887. In that year, 1,218 members formed a co-operative association for the processing and marketing of bacon hogs; and in the first year 24,000 hogs were delivered to the factory. In 1916, this plant was completely rebuilt, and now has a capacity of 3,000 pigs per week. The members of this association entered into a binding contract to deliver all their hogs to the factory, and to guarantee the necessary loan for its construction, for a period of seven years. It may be noticed, in passing, that the loan was negotiated on a seven-year basis, but is liquidated under an amortisation plan which comprises two seven-year periods. The members assume joint and several liability for all debts and deficits, but these liabilities are pro-rated according to annual hog deliveries. While this factor is vital to the successful launching of a bacon plant, nevertheless no member of the Horsens Association has, during its history, been obliged to meet any obligation whatsoever. If a producer should violate his delivery pledge, he can be fined 10 Danish kroner (\$2.65) per hog. By 1890 there were 10 co-operative plants in Denmark, since which year the movement has rapidly spread, until today there are some fifty factories. Some of the plants of the early days experienced difficulties, chiefly due to a lack of sufficient supplies of the right type of hog, and the dearth of managers who were not only conversant with the bacon trade but who also understood the technique of production. It may be added that from 1900 on, the co-operative factories of Denmark have been on a sound business basis, both with respect to development of receipts of pigs and business management. The fifty factories in existence in 1926 accounted for about 82 per cent. of the total slaughtering at the export slaughter houses. In that year they represented about 70 per cent. of the pig breeding farmers and had control of about 75 per cent. of the total stock of pigs. The membership of these asso-

ciations has greatly increased in recent years. On the other hand, the number of private packing plants is on the decline, there being only 16 in operation at present.

Bacon factories require much heavier investments than creamery plants, because they serve a much wider community. The plant unit is larger, and demands rather heavy investments to cover fixed and operating capital requirements. Not only do the bacon plants serve a larger community than do the creameries, but they must provide facilities to carry stocks, because of the curing process, which requires a considerable period of time. The co-operative creameries normally carry surplus earnings to the savings deposit account, but the bacon plants use such earnings, in part, to provide operating capital. These surplus earnings are returned to the farmers at the end of the fiscal year; at that time it is necessary to borrow part of the operating capital to provide for the first six months of the new fiscal year, which, of course, adds somewhat to the costs of operation.

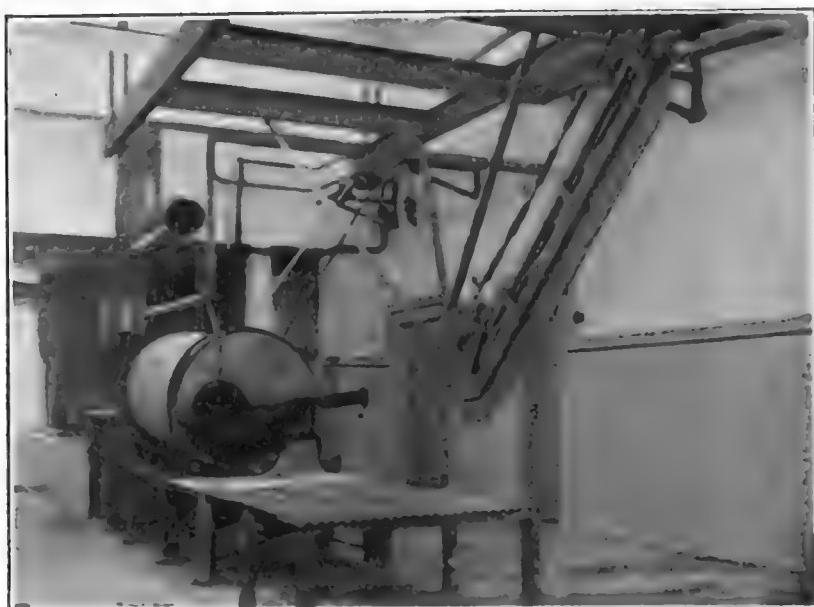
The co-operative bacon factories are established by non-stock associations organised and controlled by actual producers. The fixed, and part of the operating, capital, is secured by loans from the banks, which loans are guaranteed by the members of the associations. The banks and other creditors regard the individual members of the association as jointly and severally liable for all debts and other obligations, until these are paid. Within the association these loans are divided among the different districts, in proportion to the number of hogs pledged by each district, under contract. When the producers are thus segregated into district groups, for borrowing purposes, the farmers of each district become jointly and severally liable for their share of the association's debts; and, according to the plan first inaugurated at Horsens, each farmer assumes responsibility in proportion to the number of hogs he delivers annually to the plant. No difficulty is experienced in raising loans from the banks, especially in more recent years, as loyalty to the association on the part of individual members is unquestioned. The physical assets, of course, provide underlying security for loans so arranged.

The contract varies from locality to locality, and may cover five, seven or ten years. It should be observed that the contract is an integral part of the constitution of the association, the principles and bylaws of which are agreed to by each member. The producer is pledged to deliver all his hogs to the plant, except such as are actually used for home consumption, for breeding, and in case of sales of small pigs under three months old. A producer may be fined from 10 to 25 kroner per hog (\$2.65 to \$6.70 at par) for failure to observe his contract.

Surplus earnings are used first to take care of amortisation, and then to provide essential reserve funds; the surplus, after costs and the above funds are provided for, is returned to producers in proportion to their share of the per annum slaughtered weight of hogs. Ownership of the plant rests in the current membership, the property being valued at the beginning of each contract period. Members are given shares



Slaughter Lift.



Scalding tub, dehairing machine and lifting apparatus.



Scraping the pigs after removal from singeing machine.



Cooling and cutting-down room.

of the association's equity, in ratio to the weight of slaughtered hogs delivered during the past contract period. If a member withdraws at the end of the period, he or his heirs may receive a sum amounting to two-thirds of the amount of his share. A farmer may transfer his contract agreement, but is not released from making delivery of his hogs until the transferee has been recognised by the Board of Directors.

In most plants it is the practice to kill hogs on three days a week. Producers usually haul their pigs to the factories in wagon or truck, making deliveries in the morning of a killing day. In recent times, hogs are collected by a motor truck from the farms of members living at a distance. As high as 75 per cent. of deliveries at some factories are made by wagon or truck, the balance coming by railway. Due to this system of delivery, there is little shrinkage in shipments either at the yards or en route, and practically no losses in dead hogs. It is the custom to pay farmers a fair sum to cover transportation for hauling hogs direct to the factories, the amount varying with the distance. When hogs arrive by rail, the factory pays the freight charges from the station to the plant. Cheques to cover receipts are forwarded to owners two or three days after deliveries.

BASIS FOR PAYMENT.

For identification purposes, a tag marked with the owner's number is affixed to each ear of the hog, the tag remaining in place during the killing, scalding, scraping and singeing processes. The farmer is paid according to the weight of the carcass with the offal removed, but with head and feet attached, this being termed the "slaughtered weight." It is calculated that the slaughtered weight is approximately 75 per cent. of the live weight. The slaughtered hog on the rail is then classified according to quality. When this is secured, the tag with the weight and quality classifications goes to the office where the number identifies the owner's name. The weigher who records the tag number and weight, is licensed to do this work, and is generally assistant to the government weigher, in each town where a plant is located. The carcass, which usually weighs between 132 and 165 pounds (live weight between 176 and 220 pounds), is considered the most desirable weight to give the quality of bacon demanded by the English market. To secure for producers premium bacon prices which go with this quality of pig, all the co-operative factories require that delivered hogs shall be between 132 and 165 pounds to obtain the top price. A deduction, amounting to about one cent per pound on total weight, is made when the hog is either below or above these requirements, and if there is a spread of 20 pounds over or below requirements, the deduction is increased to two cents per pound.

REGULARITY OF PRODUCTION IN RELATION TO PRICE.

Quantity output with regularity of production are outstanding characteristics of the Danish export trade. From week to week throughout the year almost the same quantities of butter, bacon, eggs, cattle and beef leave Denmark for foreign markets, chiefly for England;

but also for Germany, Holland, Belgium, Norway, Switzerland, Austria, France, Czechoslovakia, Italy and a number of other countries. It is evident that the absorbing power of these various markets varies, both according to the character and quantity of the commodity in question, and also with respect to the time at which it is desired for consumption. It is essential that the Danish producer should understand these peculiarities of demand, and adapt his operations to comply with them. At the same time production in Denmark is naturally greater at certain periods of the year than at others; but the difference is usually small. The point is, that even with temporary reductions of output, Danish farmers never place themselves in a position where any commodity is wholly lacking, or where the product is reduced to such a minimum supply that it can be completely absorbed by the demand of the domestic market, as is the case, for example, at times, with the butter production of Canada.

From this standpoint, Danish agriculture knows neither a summer nor a winter season, but is capable of making delivery of basic export products at all times of the year. Manifestly, this is of the greatest value, especially with respect to exports of bacon and butter to the British market, which can always rely upon a uniform supply of these products. This is one of the essentials not only for making trade contacts, but in keeping them alive. Most foreign markets, if not all, can rely upon Danish production for an essential supply when wanted. Moreover, this regularity of production and sale is not the result of chance: it is the natural outcome of a systematic policy rigorously enforced. It is also due to strict adherence, on the part of Danish farmers, to proper methods of feeding: to the right utilisation of milk supplies; and to scientific breeding. Milk production is the keystone of the country's chief agricultural industry, and is based not only upon careful feeding, but also upon a systematic arrangement of the calving time. Without such methods it would be impossible for Danish farmers to furnish the 10,000 tons of milk which forms the daily output of the country, and to use the byproducts so efficiently for the production of bacon hogs of quality. Because of this planned production, Denmark has regained its pre-war trade position—a position resting upon intelligent farming and loyal adherence to co-operative principles. To utilise the skim milk returned to the farm throughout the year, pig production must remain at a fairly constant level. Therefore, when the hog reaches the desired weight it is delivered to the co-operative factory, even although the farmer might make a gain by holding for future delivery. This policy is sound from the production standpoint, and also sound from the marketing standpoint. The British market can be held only as supplies are guaranteed, and this factor in itself helps to harden prices for Danish bacon. Moreover, holding pigs off the market does not pay the farmer, for other reasons; the increase in weight brings about a deduction from the price, as the factory pays on the basis of specified weights. It may be added that this factory policy is an important factor in keeping the supply of hogs uniform, although not only the weight but the quality of the type of hog delivered affects the price to the farmer. In addition to the payment method mentioned

above, based on weight, payment is also made on the basis of quality, there being a difference of about one-half a cent per pound between each of the three quality classes.

As mentioned above, the farmer receives a first payment amounting to about 90 per cent. of the market value of his product, when the hogs have been slaughtered and graded according to weight and quality, the balance being paid to him at the end of each fiscal year. It is important to observe that the first payment is based upon the approximate market value of hogs as determined by the weekly quotation of prices. This quotation is arrived at by a special committee of three delegated for this duty, by each factory association. The manager of



Singeing machine.

the co-operative factory is the most important member of the committee, because his training and experience help him to keep in touch with, and to understand, market conditions. As a rule the co-operative plants in neighbouring counties, and sometimes in the entire province, agree upon one quotation. The latest British quotations, together with a study of the British market, form the basis for the weekly quotation in Denmark.

While the factories attempt to fix the quotation near actual values, they also strive to maintain stable quotations as far as possible. Since the private plants buy outright they are in a position to make a quotation somewhat higher than that of the co-operative plants, but the latter offset this by the return of the patronage dividend to members at the end of the year.

MARKETING DANISH BACON.

The bacon factories of Denmark are quite independent of one another, but they also co-operate to secure mutual advantages. In 1897, they formed The National Federation of Danish Co-operative Bacon Factories, to improve service and to advance their common interests. The federation has offices, with a secretary, in Copenhagen. It looks after the common interests of the factories, and lends its support to the swine industry and other co-operative activities whose object is to aid agriculture. The federation watches over the legislative interests of its members, especially such legislation as affects the swine industry, transportation, marketing, and labour problems. It has also been active in promoting pig breeding and has given financial aid to experimental projects in that field. The expenses of this work are met by the co-operative plants which make up its membership.

All export Danish bacon must bear the registered trade-mark, "Luhr Brand." A Government veterinarian inspects the carcass and offal of each pig, and only the top class bacon from healthy animals, free from tuberculosis, can be stamped with the above trade-mark, in red; and only products bearing the red stamp can be exported. Second class bacon is stamped in blue, and is confined to the home market. Also the official registered trade-mark number of each co-operative factory must be stamped on the products. It should be observed that this trade-mark is a health guarantee, rather than a quality guarantee. The special quality of Danish bacon is secured through voluntary co-operation, the result of close attention to every possible detail of breeding and finishing for the British trade. To secure uniformity throughout the entire field, and also to encourage expert cutting and trimming, bacon judging exhibitions are held several times each year under the auspices of the federation. These usually take place at Esbierg, the chief shipping point for bacon products. At this port samples from each plant are taken from the ordinary shipments, and after the judging a letter is sent to each plant giving the results. The names of the plants whose bacon stands in the best upper third of the exhibition are publicly announced. It will thus be seen that the farmers of Denmark, and their representatives, are chiefly to be given the credit for the high quality of Danish bacon products.

The greater part of Danish butter sent to Great Britain is consumed in the industrial centres of middle and northern England, but approximately 75 per cent. of the bacon is distributed in London and southern England. Usually the bacon is smoked by the English wholesalers before it is marketed through the retailers, since the average retailer has not the facilities requisite for this purpose. Many of the large retail companies, however, controlling a large number of stores, smoke their own bacon, which is received direct from the plants in Denmark. It should be added that bacon is not stored in Denmark, but is moved steadily to market as the curing process is completed. Middlemen play no part in the trade within Denmark itself, but in Great Britain agents are employed. Each separate plant has its own English agent, with the exception of a group which has organised its own co-operative distributing agency in London.

The process of marketing Danish bacon, in principle, is comparatively simple. The usual plan followed is to consign the bacon to an agent of the factory in Great Britain, who in turn sells to the wholesaler, and the wholesaler to the retailer. The independent factory has a main agency in London, and connections with agencies in the lesser markets. The agents are, for the most part, Englishmen, although some Danes of wide experience are employed also. These agents represent the Danish factories, carefully safeguard their interests, are paid on a commission basis, and keenly compete with each other not only in securing volume of sales but in obtaining the best possible prices. In other words, each agent attempts to establish high quality trade with the most influential wholesale houses, and constantly seeks to push the Danish product by finding new customers. A regular campaign is carried on by advertising, to inform the housewife upon the quality of Danish bacon. By using these and other expedients, the agent attempts to enlarge the market and strengthen the price of his product. In great degree, competition between agents revolves about the quality of the bacon, and the uniformity of supply. As a result the agent of the factory can furnish valuable information to the manager with respect to factors of quality, volume, and cure, and this information in turn helps in turning out a product that can be sold through the most desirable trade channels and those which can bring the best price.

Bacon distributed in London and southern England is sold on the bacon exchange—the Home and Foreign Produce Exchange, Ltd., London. The agents of the Danish factories deal with the wholesale trade daily on this exchange, but the principal market days are Mondays, Wednesdays and Fridays. Each week on Friday the Exchange issues a market report wherein are recorded the prices of the sales on Thursday and the last quotation on Friday before the report is made public. The exchange itself is merely a bargaining centre, a market place, and does not in any sense attempt to control prices. It does, however, protect the interests of both the seller and the buyer by enforcing fair trade practices. When the agent sells the product of a factory on the exchange he must make collections and assume trade responsibilities, but when the factory itself makes direct sales to the retailer it must assume these obligations.

Each factory notifies its agent of the amount of bacon that can be delivered for the British market during the succeeding week; whereupon the agent solicits business from his regular customers and secures new buyers to dispose of surplus supplies. The orders are referred back to the factory and shipments are made direct to the wholesale trade, or the bacon is shipped to a warehouse either at London or at one of the ports, and is then distributed according to the agent's instructions. The greater part is sent direct to British wholesale provision houses, the balance being forwarded to retail concerns, or consigned to import agents at the various trade centres. An important point to notice is the manner in which the Danish factory carefully studies the requirements of regular customers over a period of years, for in this way consumer demand, which fluctuates with the grade and cure of bacon, can best be satisfied. Perhaps the most powerful economic instrument

in the hands of Danish producers is the close connection they have made with the British wholesalers, who supply the retail shops in their respective territories. By this means a steady and consistent demand is fostered for Danish bacon products. In addition, two or three of the Danish factories sell direct to the retailer, part of the product going forward to the retailer on an F.O.B. basis. Some of these retailers operate a number of stores, and thus provide volume for the factory. Although some weekly standing orders are on the books of these plants, the bulk of the orders is secured by the factories' representatives in Great Britain. This is an ideal method of marketing, displaying trade



*Fat melting kettles.
(Lower part)*

confidence in high degree; but the functions of the British wholesaler are so important that it is doubtful whether in any large measure they can be dispensed with.

MARKETING BYPRODUCTS.

Each co-operative bacon factory is equipped with a sausage-making plant of sufficient capacity to utilise the byproducts available. In order to make the best use of part of the byproducts, the factory also slaughters a certain number of cattle, sheep and swine annually. A development peculiar to Denmark is the somewhat wide use made of retail stores in the nearby towns for the marketing of some of the byproducts, these stores being owned and operated as part of the general scheme for processing bacon hogs. Some of the factories, also, sell offal to private firms, sometimes over a comparatively large territory; while offal that

can not be so disposed of is forwarded to chemical plants in Denmark and Germany to be turned into commercial fertilisers. Each factory is also equipped to turn blood and bones into an economic commercial commodity, such as feeding cake and commercial fertilisers. At several factories visited, it was stated by the management that such utilisation of the byproducts practically covered the entire operating costs.

CENTRALISED SELLING IN LONDON.

Danish farmers are making progress in perfecting a scheme for centralised selling in Great Britain, but as yet they have not entirely solved the problem. As early as 1902, three Danish plants established their own selling agency in London with the objects of breaking away from old trading methods, of eliminating the British agent through establishing their own sales agency, their own wholesale houses, and establishing direct contact with retailers. By 1906, eight factories had joined the new organisation, and by 1926 eighteen factories constituted a central selling agency in London, handling approximately 27 per cent. of the Danish bacon export trade. The earlier venture was later reorganised under the trade name of The Danish Co-operative Bacon and Trading Company, Ltd., London (D.B.C.).

The D.B.C. holds contracts binding the factories which compose its membership to make deliveries of their entire product over a specified period of time. The company owns and operates its own warehouses and trucks in the principal markets and is equipped to smoke bacon before effecting its distribution through the retail trade. The D.B.C. was obliged to enter the provision trade also, and to handle certain accessory supplies, because the English wholesale houses with which it competed supplied retailers not only with Danish bacon, but Irish, Canadian and American also, as well as with a wide range of food supplies, including groceries and American lard. The D.B.C., if overstocked at any particular point of time, markets its supplies of surplus bacon through English wholesalers, in these cases functioning merely as an agent for the factories. Unfortunately, no reliable data are available to make comparisons between the two systems of selling, or to establish conclusively which system is more profitable to the producer. The D.B.C. is, however, an influential factor in the British bacon trade, as it has introduced new marketing methods and established new trading principles. By giving keen competition to the established trade it has undoubtedly opened wider and deeper marketing channels in England for Danish bacon. Moreover, it has reduced commission charges; and direct control of an important part of the supply makes it impossible for British buyers, even if so inclined, to engage in any price-fixing combine. In all these directions it has improved market conditions in England for primary producers in Denmark, and has more than justified the investment of energy and capital that has brought it up to its present high standard of efficiency. Through personal interviews with its officials, and an inspection of its plant equipment, a most favourable opinion was formed not only of the business ability placed at the disposal of the company, but of its unique modern methods of doing business.

The general manager expressed the opinion that successful marketing of bacon and other bacon hog products rests ultimately upon successful production, and production in volume, on the farms. He believed that Denmark had certain advantages in these particulars, because on the small farms of 8 or 9 acres, and on the somewhat larger holdings, close personal supervision was possible, each day of the year, while family labour held down production costs. It was found that the supplies of the D.B.C. move regularly to market, because the storage facilities at the factories in Denmark are limited, while the flow of incoming pigs is regular. One of the officials stated that it might be possible to hold a surplus supply off the market for three or four days, as the British railways without extra charge provide storage for seven



Refrigerating room (cold storage).

days; but beyond this narrow limit of time, both the lack of adequate facilities for storage, as well as the cost, compel the D.B.C. and other importers to find an outlet for all bacon supplies.

It was observed that the D.B.C. has carried specialisation in selling to a high point of efficiency, the most careful study being made of the English demand for mild cured bacon, not too salty. Different qualities of bacon are sold through the retail trade, to cater to special demands. The equipment the company uses for meeting the requirements of the local trade in London, is excellent, including a fleet of twenty-four lorries. In addition, a demonstration van tours the country districts, making direct sales to customers, as part of a broad advertising policy. The van is a butcher shop on wheels, heavily insulated with cotton and cork, thoroughly ventilated, and equipped with electric lights. At the plant itself, the most scrupulous attention is given to matters of sanitation. Its smoke rooms are the largest in England, and the thirty stoves

for smoking bacon are fed with fir and oak sawdust, giving a fine flavor and color to the finished product. The byproducts of the plant are forwarded to the retail trade in the English counties and abroad. Gammons are put up in neat tin containers, each pressed into the tin under hydraulic pressure, and packed six in the case. These and other byproducts are marketed over a wide area in England, in India, and elsewhere. It should be added that direct shipments to country retailers are made by rail, both the shipper and the consignee each holding a key to the car, which guarantees proper delivery of the product.

MANAGEMENT OF BACON FACTORIES.

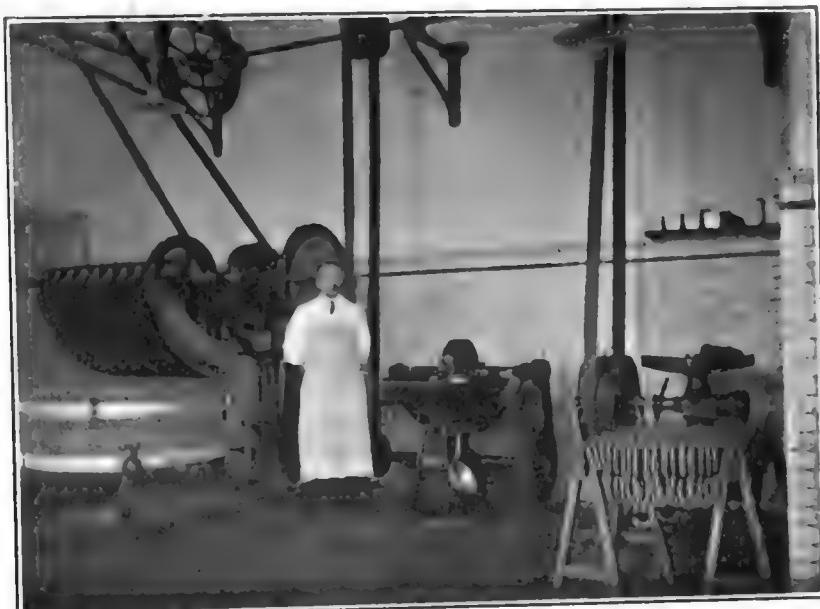
It is customary to hold an annual meeting which producers attend, and at which the financial statement for the year is presented and certain business is transacted. The policy in voting at the annual meeting is to give one vote to each producer; and fundamental changes in practice or management must have a clear majority ranging from two-thirds to three-fifths of the producers present. The factory is under the direct control of a board of directors, consisting of from seven to eighteen members and holding office from two to three years. Various methods of electing are followed: First, the directors may be elected at the annual meeting; second, they may be elected from the various districts of the territory tributary to the factory, or as members at large; or, third, a committee of representatives of the producers may be first elected, and then, as an electoral college, may select the directors. The last is the latest procedure, but there is no fixed rule enforced in choosing directors to supervise the Danish plants. Under the latest plan voting power in the smaller area is based either upon the number of producers connected with the factory, or upon the number of hogs delivered during the year. Each representative holds three or four meetings, annually, in his constituency, so that producers may be kept in touch with market conditions and policies, and the general economic situation. The chairman of the board is the only salaried official, and he receives the relatively small sum of \$100.00 to \$300.00 per annum, the other directors being paid only their expenses, while undertaking official duties. It is the astonishing enthusiasm of leading farmers in each community, their deep loyalty to co-operative principles, rather than any money payment, that vitalises the co-operative organisation.

The manager is appointed by the directors: the manager's appointed assistants must be approved by them. The manager must have experience, training and ability, both in plant management and selling; but technical knowledge of processing is regarded as more important, when the factory sells through the D.B.C. in London; while the reverse holds if the factory operates through an English agent. The problem of management was a most difficult one to Danish farmers until the industry itself, from within, brought trusted leaders to the front. Under the conditions that obtain today the management of co-operative bacon factories in Denmark is experienced, intelligent, forward-looking, and highly efficient. It may be added that the books of the plant are subject to a monthly audit, either by two auditors appointed at the annual meeting or, as in some instances, by state auditing officials.

EQUIPMENT OF THE DANISH TYPE OF PACKING PLANTS.

It should be observed that the Danish packing plant, being given over principally to the processing of hogs, is constructed along unique lines, and appears, as far as observation and discussion could determine, to be an efficient industrial unit. Because of the interest Western farmers have in the Danish experiment, particularly from the standpoint of using it, with adaptation, for their own purposes, a brief outline may be given of the general equipment and organisation of these plants.

In the case of an export bacon factory, for example, designed to handle 45,000 pigs a year, the following equipment is provided: First, steam-power and refrigerating machinery is secured, including such



Sausage factory.

items as the steam boiler, feed pump, superheater, cold and hot water tanks, water softener, and steam engine with direct coupled ammonia compressor. It goes without saying that such equipment includes various special fittings, such as driving belts, sprinkler condenser, cooling batteries, etc. Second, electric machinery was an important part of every plant visited, this including dynamo, electric motors and wires, armatures and switchboard for light and power. Third, sliding rails are installed for transportation both of animals and other raw materials from place to place.

The machinery and equipment for the slaughtering hall proved especially interesting, being for the most part of the best design, and planned for economical operation. This included the slaughter lift, the scalding tub with lifting apparatus, dehairing machines, singeing machines, the washing drum, and the blood boiling and pressing

plant. It was noticed that this hall was equipped with shafts and pulleys, the usual hanging irons, and hoist chains. There were also trucks for the transportation of meat and meat offals, bacon trucks and other vehicles. The brine plant was equipped with pumps, pipes and valves for salting and injection, outlet pipes and valves, and the circulator. Special equipment was found for fat melting, including the melting kettle, the refining kettle, and a platform equipped with pipes and valves. The rendering plant included the fat separator, drying apparatus for blood and bonemeal, the cake breaker and so forth.

Miscellaneous tools of special design were furnished the men, including knives and saws, brine injectors with tubes and needles, shoulder blade removers, brine testers, special brushes and many other instruments making for efficiency of operation. Most plants include also a sausage department, furnished with the essential equipment. This consisted of chopping knives, meat cutters, meat mincers, mixing machines, spice mill, sausage filling equipment and other devices. Finally, commodious but simple quarters were found for the office staff, the manager's office, a special room for the workers, and a veterinary surgeon's room. Careful inquiries were undertaken to discover the propable cost of equipping and building a plant on the Danish model, capable of handling, say, 45,000 pigs a year. Messrs. Nicolaisen & Kruse, of Copenhagen, construction engineers, who have specialised in building bacon factories, estimated that it would cost approximately \$123,903, to build such a plant in Western Canada, assuming that the machinery would be imported from Denmark at prevailing prices. This was merely an estimate, and it was recognised that the figures would necessarily be materially changed by taking into account the difference in building costs, etc., as between Canada and Denmark.

CHAPTER V.

EDUCATIONAL AND SOCIAL FACTORS IN DENMARK.

AGRICULTURAL CREDIT IN DENMARK.

Agricultural credit has been highly developed in Denmark and made an effective instrument not only in placing the farmer upon the land, but in helping him to improve his standard of well-being. By providing the farmers with relatively cheap credit, costs of production have been reduced, the farm better equipped, and the farmer given greater assurance that he will be able to meet and overcome the difficulties that inevitably arise in the productive process. The most important development in the field of credit has taken place in extending long term credit on the basis of land values. This system has been in satisfactory operation for some 75 years, and has been adapted from time to time to better meet modern agricultural conditions. Provision has been made only in recent years to furnish the farmer with working capital, since the relatively steady income from his cows, pigs and poultry has normally provided the Danish farmer with financial resources sufficient to take care of current requirements. Ever since the abolition of serfdom the Danish authorities have concentrated more or less consistently upon creating a nation of landed proprietors, by breaking up the large estates and making it possible for the small farmer to purchase land on easy terms. For this purpose legislation was introduced as early as 1786, but the present credit programme had its real origin in the laws of 1850, which provided for the establishment of credit institutions based chiefly upon the Prussian Landschaften system. These credit organisations are nonprofit voluntary associations, composed of borrowers only, and are designed to bring, with the least possible friction, borrowers and lenders together. This has been accomplished in really remarkable degree, and has resulted in giving the smaller farmers adequate credit wherewith to become, through their own labour and ambition, actual proprietors.

By introducing the principle of joint liability, possible in a closely settled community where families have lived together for generations, the factor of risk was greatly reduced, which in turn held down the rate of interest. Capital is provided up to three-fifths of the value of the property on executing a first mortgage and giving it as security; but usually the loan does not exceed 50 per cent. of the value of the farm. These loans, moreover, are spread over a period ranging from 45 to 60 years, and are retired on the amortisation plan, the burden being so light that it does not cut into the farmers' living standards. Interest rates vary, but the most attractive rate, as experience has demonstrated, is 4½ per cent. When a farmer borrows on that basis he actually pays interest, however, at the rate of 5 per cent., the difference being designed to take care of loan redemption, expenses of administration, and to provide a reserve fund to cover possible losses in that particular borrowing group. These reserve funds are returned to members of the association when the loans so protected are liquidated.

The borrower in exchange for a mortgage on his property receives credit association bonds, and not actual cash. These securities he usually sells on the Copenhagen Exchange, realising a sum that will vary with the interest rate, and the conditions of the money market.

The rates of interest run from $2\frac{1}{2}$ to $4\frac{1}{2}$ per cent. Buyers of bonds are paid interest by the association, which takes care of all administrative detail. These bonds are issued in series, any particular series being subject to termination when the bonds issued amount to 10,000,000 kroner (\$2,680,000). To make them attractive to buyers, and yield the greatest return possible to farmers, the Government exempts them from taxation. Usually the bonds have proved highly attractive as investments, but fluctuate in value according to conditions in the money market and in the agricultural industries.

The associations are managed on a democratic basis. The territory in which the farmers co-operate for the purpose of securing capital is divided into several districts, and each district is entitled to one representative on the board of directors. These directors in turn appoint an executive committee of three, one of whom must be trained in law, and one experienced in farming. This executive passes upon applications for loans, and takes care of the details of the organisation. In addition, each district elects three appraisers, whose function it is to pass judgment upon the value of the property offered as security for a loan, the farmer in the first instance furnishing necessary data bearing upon the question. When an application for a loan is made, two appraisers must examine the property within a period not exceeding fourteen days. Their report having been received, the district representative forwards the request to the executive board, which decides whether or not to grant the loan. The whole plan is comparatively simple, inexpensive, and has been successful because of the care made in selecting risks and in enforcing sound business principles. The associations operate independently of one another, because it has been found in practice that the property which lies behind loans tends to be uniform in particular districts, and therefore may be more closely related to the borrowing of that district than elsewhere.

A somewhat similar plan, devised for the small farm proprietors, was launched by legislation passed in 1880. Under this plan, there are two associations, one in Jutland, and one covering the requirements of the islands. With these organisations, loans are made only up to 50 per cent. of property values, and payments usually must be completed within 45 years. Because these loans are granted to small farmers, whose financial resources are slight, the state has undertaken to guarantee payment, which in turn raises the market price of the bonds, and reduces the cost of money borrowers.

In 1897 an Act was passed providing for the formation of Second Mortgage Associations, the "Hypothec Associations." These have also proved beneficial in providing additional capital to progressive farmers, or to take care of their needs under emergency conditions. The following table indicates the numbers, and outstanding loans, of these various types of credit Associations for the year 1925:

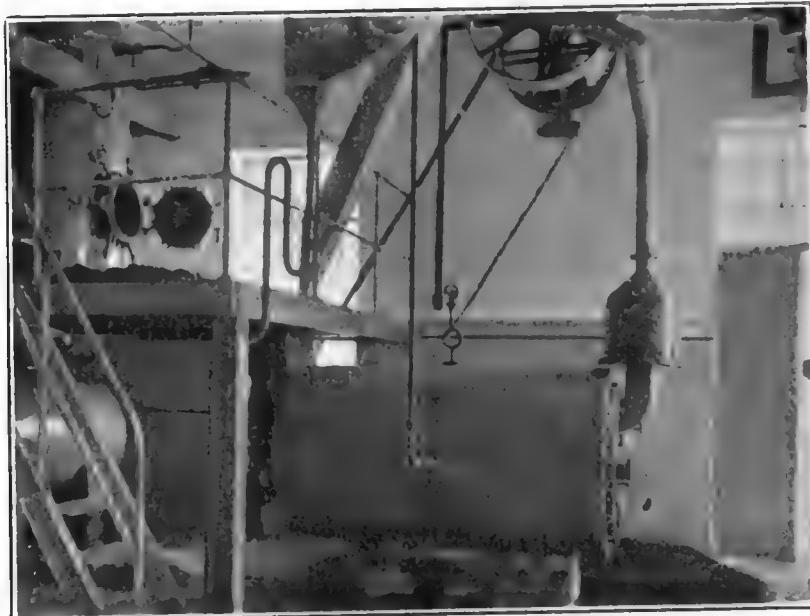
	Mortgage Societies	Credit Societies	Hypothec Societies
Number of institutions	13	9	
Number of loans	316,532	44,374	
Outstanding indebtedness, million kroner	3,032	319	
Cash bonds in circulation, million kroner	3,038	318	
Bearing interest at:			
2%	3		
3½%	307		
4%	844		
4½%	1,852	27	
5%	22	291	

The bonds under normal conditions bring a good price, two features having an important bearing upon their market value: first, the farmers assume joint liability for the debts of the association; and second, interest is paid by the society, which meets all obligations promptly. Losses under the scheme have been small, in 1924-25 amounting to only 121,000 kroner, while the average for the three previous years was only 143,000 kroner. For the purpose of further supporting landed credit, especially in the selling of bonds abroad, the Royal Danish Mortgage Bank was established in 1906. The Mortgage Credit Societies and the Hypothec Societies, as well as public corporations, may exchange their bonds for Mortgage Bank bonds on a basis similar to that which obtains in the operations of the Mortgage Societies themselves. This system offers the double advantage of uniform security and the additional guarantee of the Royal Danish Bank. The bank's securities are also strengthened by the further fact that the state has transferred a bond of 20,000,000 kroner to it, to provide security for the bonds issued. The sum of the bonds valid at any time must not exceed eight times the amount of the state guarantee. In 1925, the bank had bonds outstanding to the amount of about 105,000,000 kroner.

In 1898, under state legislation, a scheme to provide short term loans was worked out. Under this plan the state provided 5,000,000 kroner (\$1,340,000) at a low interest rate, the funds to be loaned to farmers through local agricultural loan associations. The objects sought were to aid the farmer in buying seed, fertiliser, feeds, etc., the security offered consisting of livestock. While many of these local loan associations met a real need in the early part of the century, the scheme eventually fell through, because the loan associations were, on the whole, unable to achieve financial independence and repay the sums borrowed from the state. When the state loans were recalled in 1908-1916, the majority of the loan associations disappeared.

In 1915, Co-operative Rural Banks were organised. These are co-operative institutions designed to give their members a complete banking service in their several communities. Farmers, who make up the membership of these banks, assume joint liability for outstanding obligations. While the banks may accept deposits from the community at large, they can grant loans only to members. On the whole these institutions have met with success. These banks, in turn, have purchased shares in The Danish Co-operative Bank at Copenhagen, through which they are able to make excellent banking connections for loans and deposits.

Rounding out the co-operative financial organisation of rural Denmark is the Danish Co-operative Bank of Copenhagen, launched in 1914. In the early years of the co-operative movement splendid financial support was afforded by the savings institutions of the country; and it was common practice in building the first creameries and bacon plants to secure loans from these local savings companies. Nevertheless, early in their institutional history the farmers acutely realised the need for an institution of their own, which would lend its support in financing the larger co-operative enterprises. When the new co-operative enterprises, especially the larger ones, applied to the private banks for aid, they secured the funds only with difficulty, and often unreasonable security was demanded. By 1908, definite plans for the formation of a co-operative bank were made, and to secure the necessary capital the



Rendering plant.

various co-operative associations were asked to subscribe for capital stock. The bank was opened in Aarhus, in 1914, but, in 1918, the main offices were moved to Copenhagen. It is a capital stock institution, incorporated under the Danish corporation laws, and engages in all phases of banking, as well as lending its support to the many co-operative associations of the country. It has many branches and offices at different points in the kingdom. It has now assumed first place among the credit banks of Denmark, and has become the clearing house for the financing of all agricultural exports. Its capital stock is owned by many different co-operative organisations in Denmark, by private individuals, and by savings institutions.

Only members who have transacted business with the bank during the year may vote. Shareholders elect delegates, who form the general assembly, which has supreme control of the bank's affairs. An im-

portant point to observe is that individual shareholders can, under no consideration, elect more than half as many delegates as co-operative shareholders, hence control will always rest in the hands of the latter. Surplus earnings, after providing for interest on capital, depreciation, and at least 25 per cent. for a reserve fund, are returned to shareholders. The Danish Co-operative Bank has had astonishing success, due to the fact that its transactions ultimately revolve about the basic interests of agriculture.

LIVING CONDITIONS IN DENMARK.

While not directly related to problems of agricultural production and marketing, nevertheless, living conditions are largely the outcome of the technical skill displayed in farm operations in Denmark. Indeed, the true test of the validity of the Danish agricultural programme, on its technical side, is to be found in what that programme creates in terms of individual and social wellbeing. It is, therefore, not outside the scope of the present study to state briefly what the Danish people have accomplished through social legislation, and the living standards they have established on economic foundations.

Denmark is, perhaps, best known abroad for its agricultural co-operative system, and for the production of quality products, including butter, bacon and eggs. At the same time the feeling of solidarity among the farmers, and indeed the nation as a whole, as well as the general education of the people and their democratic way of thinking, have found expression in important insurance and social welfare legislation for the benefit of all classes. It may be thought that a highly developed social welfare programme is unsuited for an agricultural country, but Denmark has proved the contrary. The explanation is found in the fact that the medium sized and small farms play so great a rôle in the country that social legislation, on many points, covers the greater part of the farming community, and not only the working class. Moreover, during the past generation a considerable industry has been developed in Denmark, along with farming, and in addition many persons are engaged in commerce, transport and shipping. About four-ninths of the population live in the country, and approximately two-ninths in the metropolis of Copenhagen, which is the greatest and most important commercial city on the Baltic. About the same number live in the eighty-four provincial towns, and the remainder live in the smaller urban districts and suburbs.

The demand for social legislation did not arise until the seventies and eighties, and until the increase of capitalistic production obliged the state to concern itself with the condition of the working classes. After discussion both within and without Parliament, and a prolonged constitutional struggle, the social welfare programme received general acceptance by almost the entire nation.

Denmark did not introduce social insurance on the basis of compulsion, as in Germany, but instead followed two other lines of development:

1. Voluntary insurance in private societies, in sick benefit societies, which were state aided and state controlled, and the introduction of unemployment relief funds on the same model; and
2. Public benefits without insurance premiums, but also without loss of civic rights, including old age pensions, free treatment for tubercular patients in hospitals, etc.

Aside from the above two groups, Denmark has also compulsory workmen's compensation, supported in large part by employers of labour. In a general way it may be said that Denmark has made provision for granting aid in cases of illness, invalidity, accidents, old age, childhood, unemployment, as well as in other directions where there are specific cases of need. It should be observed, for example, that sickness insurance is universal in its scope, and is not confined to the working class. It is open to ordinary workers, and to men and women of the same economic standing, as for example, farmers, artisans and tradespeople, civil service employees, and the like. Apart from the sick pay this insurance also covers the children of members, where such children are below 15 years of age. Approximately three-fifths of the population of the country are insured against sickness, an achievement which is not surpassed in any other country. In case of illness, the societies assume the liability of providing hospital treatment, sick pay, medical aid, as well as maternity benefits. They may obtain state assistance for dental treatment, home nursing, rest at convalescent homes, and payment for medicines. Denmark has a highly developed hospital service also, supported almost exclusively by the municipalities or by the smaller local government divisions. The National Union for the Prevention and Cure of Tuberculosis has a large number of sanatoria, which are supported in part by grants from the state.

In addition to the above, provision is made for injuries due to accidents while working for another, funds being provided by insurance premiums paid by employers. Since 1917, this legislation has covered not only the workers of all trades, but anyone doing work on behalf of another. Besides, small employers and independent workers may voluntarily insure themselves and their wives. Where incomes are below a certain limit, grants may be made by the state for this purpose. This provision, at the present time, is of importance chiefly in agriculture and the fishing industry. Besides the old age pension scheme for the deserving poor, there are many Acts which apply to the care of children. *The Unemployment Insurance Act*, of 1907, was placed on a voluntary basis, but although voluntary independent funds are created under the Act, there is also state recognition and support. In the very severe periods of unemployment during and after the War, the Act and its regulations have been modified to provide extraordinary aid where the insurance did not suffice to cover requirements.

Finally, it may be said that there is no uniform system covering social insurance and social relief in Denmark, but rather a series of Acts that have been adapted during the past generation to changing economic and political conditions. Efforts have been made, however, to obtain the greatest possible coherence and uniformity consistent with

voluntary association of the efforts of the people, aided and directed by the state, to overcome the disabilities of sickness, old age, unemployment and the effects of economic crisis which are recurrent under modern conditions.

Economic and social reforms have made comparatively rapid headway in Denmark, because the Danes are a homogeneous people, and, therefore, have no racial problems on their hands, except in the areas taken over from Germany after the War, and because they are an educated people with probably the smallest illiteracy ratio in the world. Too much cannot be made of their winning fight to bring education of a practical character and of great cultural value to all able to assimilate it, because only an enlightened democracy can wisely



Pickling room (salting room)

choose its leaders, and hold those leaders to the task of rendering service. The Danes have been eminently successful in securing the services of experts in every phase of their economic and social life, but ultimate control is kept in the hands of the people themselves. They have made an astonishing success of their co-operative activities because they were keen enough to realise that co-operation in the rural communities must include all classes despite differences in economic status; they realised, further, that if one group were permitted to sink below the poverty line, such a group could have no faith in their fellows and, therefore, could not co-operate with others for the general good. In the rural districts, poverty is practically unknown, and the farmers are, therefore, able to co-operate with an enduring sense of moral obligation and of group loyalty. Poverty has been largely abolished among the farmers through co-operation, while social legislation has done much for urban workers. That is not to say that Denmark, both in the cities and the country dis-

tricts, has not suffered severely as a result of the War. There has been distressing unemployment in the cities because of the demoralisation of the Baltic trade, in which Danish merchants in pre-war days were prominent. Such unemployment will disappear with the rehabilitation of European trade and commerce, being for the present part of the general problem which has affected most European industrial centres, particularly those in Great Britain. There is, of course, as everywhere, some "disreputable" poverty in Denmark; but it is under strict and enlightened control. With respect to the economic distress that may follow old age, illness and the like, Danish municipalities, supported by the state, have made provision for its alleviation. In a word, the care of the poor, the feeble and the aged in Denmark has been placed on a scientific basis.

In all essentials Denmark is a democracy, for the remains of feudalism are few, and fast disappearing. Already the crown lands and properties have been surrendered to the state. The glebe lands, formerly in the possession of the Church, have passed to peasant owners, the Church receiving compensation from the state treasury. In 1919, the Danish Parliament destroyed the law of entail, and appropriated one-quarter of the land of entailed estates, and approximately one-fifth of the accrued capital equipment of such estates, to provide more farms under peasant proprietorship. It may be that this action violated the constitution of 1849, but the estate owners did not contest the issue in the courts. The Danes have justified it on the grounds of economic necessity, and have based their policy in this respect on the underlying idea that agricultural land should be in the possession of those who cultivate it. Denmark has been successful in establishing, under normal conditions, a proper balance between the economic activities of its rural and urban communities. Copenhagen, together with other urban communities, affords a splendid market for the products of the farm, while the surplus is disposed of abroad under the most favourable possible conditions. Part of this success has been due to the whole-hearted way in which urban interests have worked together with country producers to solve the problem of creating markets for agricultural products, and to develop in Denmark such manufacturing industries as are naturally based upon agriculture. It should be borne in mind that the urban consumers of Denmark outnumber the country producers in the ratio of three to two. In this respect, Denmark has the advantage over Canada, where no such favourable ratio has yet been created, and where the important urban communities are established, in many cases, a long way from the centres of farm production. There is a cityward drift in Denmark, as in all industrialised nations today; but it is due chiefly to two factors—the development of machine industry and commerce, on the one hand, and to the difficulty of dividing the small holdings among heirs, on the other. It is in the latter respect that Canada has an overwhelming advantage, as is found in the fact that some of the Danish rural districts are in a static condition, the population having shown no increase for a generation. It is necessary to observe, however, that the movement from the country to the cities in Denmark is not compelled

by a lower standard of living, as has been the case in the great migration that has occurred since the close of the War from the farms of the United States to urban centres.

As has been pointed out, the Danish farmers have organised their agriculture as thoroughly as machine industry has been organised in the leading industrial nations. In a sense, they have gone much farther, for they not only produce their own raw materials, but process these in their co-operative plants for final consumption, marketing them through their own sales agencies, and financing the process through their own credit institutions. Agricultural banking is rapidly developing in that country, thus affording the means of giving farmers financial as well as technical control of their industry. Attention has already been drawn to the fact that there is no single class of farmers on one level of production in the country; on the contrary, a certain amount of diversification, affording the benefits that come thereby, is guaranteed by the division of the farmers into large estate owners, proprietors of fairly large farms, the middle class farmers, and finally tenants and leaseholders.

It would appear that the large estates are doomed to go in Denmark, for the laws of 1919 tax all land upon the basis of its market value, rather than upon its net income. Therefore, it is not easy for a man to own and operate a farm of more than 250 acres, and it is becoming quite impossible for the idle rich to live in cities on the income derived from rents. It must be said in justice to the owners of the big estates that they have made at least three distinct contributions to Danish agriculture: first, in planting and conserving forest areas; second, in promoting the development of high bred stock; and third, in the support they have given to dairying and pork production. Because these large estates are located all over Denmark they have set certain standards which the freehold farmers have emulated.

As already noted, the "proprietors" form the second stratum in Danish agriculture, the average size of their holdings being approximately 289 acres, and the total 1,431,000 acres—that is, more than all the small peasant acreage put together. This group, which numbers approximately 5,000 persons, lacks solidarity, being made up of farmers who have worked their way up from the bottom, aristocrats who have come into the land by inheritance, and bankers and factory owners with a taste for country life. The middle class farmers constitute the backbone of Danish agriculture. They comprise about 45 per cent. of all the farmers, and own about two-thirds of all the land, amounting to 6,320,000 acres. The average farm for this group comprises 69 acres. These farmers are active in improving their property, in increasing and improving their livestock holdings, and in beautifying the farm surroundings. Too much emphasis cannot be given to the fact that they have a home interest rather than a speculative interest in their possessions. These farmers cling to the land, which passes on from father to son, and do not wish to sell at any price whatsoever. Although Conservative in state politics, they joined the radical democrats in breaking the law of entail, thus forcing the big estate owners to sell outright to the leaseholders.

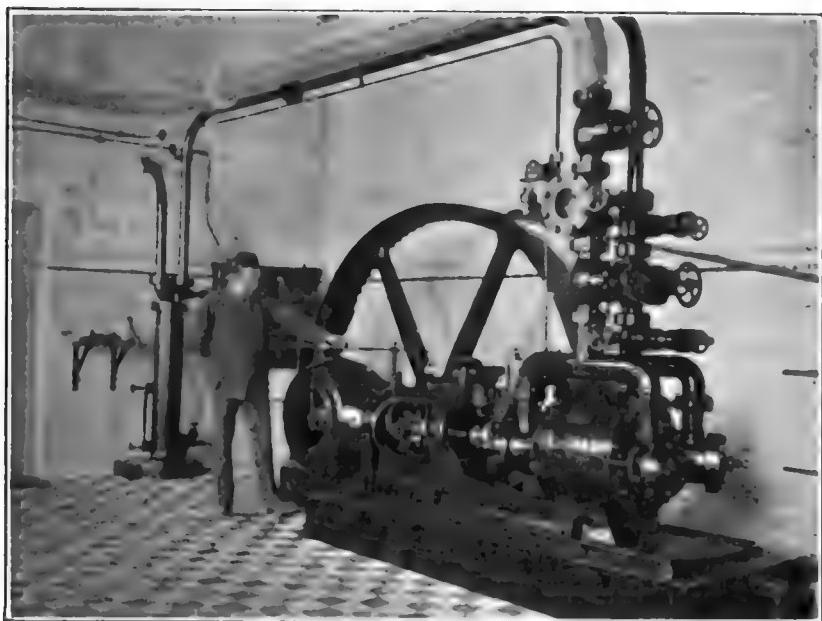
Although the peasant farmers at the bottom of the economic scale comprise more than one-half of all the Danish farmers, they own only about 15 per cent. of the land. Their holdings range from 1 to 25 acres, the average size of the farm being 12½ acres, the total acreage being 1,360,000 acres in round numbers. It is manifest that they could not accomplish much on farms of this size were it not for their technical ability in producing pigs and poultry and dairy cows, and the marketing of their farm production on a co-operative basis. Co-operation, in a word, has proved an effective instrument in raising their production and marketing standards almost to the level of that of the middle class farmers. Indeed, the livestock on these farms receives a kind of personal supervision which is almost impossible in big scale farming. By personal attention to the business they have placed their farms almost on a manufacturing basis, in which the processes are reduced to routine, but routine informed by science. Consequently, the bacon and butter produced from the raw materials of these little farms attain the highest standards. To be sure, there are failures on these farms, as elsewhere; but such failures have been surprisingly few even under the hard conditions that have obtained since the close of the War. The tenants and leaseholders of Denmark are comparatively few in number, amounting to less than 5 per cent. of all Danish farmers. The long-term leaseholders make up about one-half this group; they are operating the large farm units of the estate owners, and are destined to become owners of the soil they cultivate when the fixed policy of the state shall have been consummated. During the past generation many leaseholders have bought the farms that they and their ancestors held under perpetual lease, the owners being forced to sell under the recently enacted legislation.

One encouraging feature of Danish farm life, and one that stood out in striking contrast with what was observed in Germany, Poland and Russia, was the status of women and girls in the farm economy. The Danish women work hard, but they do no work in the fields, nor do they undertake men's jobs on the farm, except in the case of the wives of peasant farmers who lend a hand during the harvest season in the garnering of the grain and root crops. The wives of smaller farmers do the milking as a rule, but the men undertake the heavy work of carrying the cans to the wagons of the co-operative creameries. The women and children take much interest in the poultry on the small farm, and undertake the light work of feeding, and gathering the eggs. The women keep the courtyards swept, but the men again do the heavy work of cleaning and whitewashing the piggeries and the cow stalls. The men also work at the cutting, mixing and distributing of the feed for the farm animals, and the washing of the big milk cans. The women do no churning, and do not even operate cream separators, for the milk goes whole to the creameries and the byproducts are returned to the farms in the creamery wagons. These peasant proprietors sell their butter and use margarine. On the very small farms the food is wholesome and abundant, but care is taken to get the full market value of farm products by which in turn the standard of living is maintained.

Limits of space prevent anything approaching a complete analysis of Danish living standards, or of the status of women throughout the

farming community. It may be said, therefore, in a word, that the general living conditions are extremely good, and the farm houses decidedly attractive, from a Canadian point of view. The women undertake the housekeeping tasks that are regarded generally as pertaining to feminine activities; but they are not burdened with the heavy work which is characteristic of women's work in the peasant farming communities of Germany, Poland and other countries.

On the small farm of 20 acres and upwards, one finds in Denmark splendid farm buildings and equipment, and generally a comfortable and well kept house. The farm buildings are generally situated in the form of a square, open at one side, and enclosing the courtyard with the house a short distance away, convenient to the farmer's work.



Ammonia compressor.

The horses and cattle are properly housed, the piggeries carefully planned and constructed, and absolutely clean. The equipment consists of wagons, a dog cart or a buggy, and the utensils ordinarily required about the dairy barn. The machinery, consisting of planters, mowers, rakes, and reapers, is properly housed. The barns and dwellings are lighted by electricity, the barn machinery is run by electric motors, and there is a general air of order and industry about the entire place. The garden produces vegetables, fruits, and flowers; the house is brick, covered by terra-cotta tile. The homes are comfortably furnished in excellent taste, and usually the farmer has a room set aside as an office, where he keeps account of his costs and income. Very few automobiles were seen in the rural communities, the splendid roads and the proximity of the farms to villages and towns inducing a wide use of the bicycle. Everywhere one found evidence of pride of possession, the external manifestation of which was seen in the quality of the live-

stock, the upkeep of the buildings and the beautifying of the surroundings of the home. Briefly, the Danish farmers appeared to be concerned not only with maintaining and improving standards of living, but also standards of culture based upon the needs and opportunities of country life.

DANISH EDUCATION AND AGRICULTURE.

Reference has already been made to the scientific aspects of Danish farm work, and the skill, intelligence and administrative capacity evidenced by the farmers engaged therein. The exceptional results achieved have not been the outcome of chance, climate or fertility of soil—they have been the outcome of intelligent concentration upon problems of production and marketing under the guidance of the scientific outlook on life. Perhaps the schools have been the most effective instrument in raising production and social standards in Denmark. The country possesses admirable schools—primary schools, technical, agricultural colleges, commercial academies, teachers' training schools, and the world renowned University of Copenhagen. From what could be observed, within the limits of the time available, Danish formal educational standards rank high; but it is in the creation and administration of the People's High Schools that Denmark has made its most significant contribution to the intellectual heritage of mankind. Because of their intimate relationship to Danish agricultural progress brief reference may be made here to their nature and functions. An immense literature has developed around them, and many men have devoted a lifetime to their service.

The People's High Schools derive their importance not because of their technical achievements, but because of their educational and cultural value to the rural population of the country. They owe their inception to the teaching of Bishop N. F. S. Grundtvig, who combined the activities of bishop, historian and teacher; but it took years before his idea secured a firm grasp upon the rural community. When he first advocated the formation of cultural centres for the farm youth, Denmark was still, in its agricultural aspects, a peasant economy, the farmers carrying on their occupation under centuries old methods. About 1865 a profound revolution in the social and economical life of Denmark began to take place under the influence of this great man's teaching. Today the peasant has all but disappeared; the Danes are the most modern of farmers, and have at their command the latest scientific technique, and are carrying on the kind of agriculture which is practised on the experimental farms of some of the agricultural colleges of Canada and the United States. In the People's High Schools the rural population of Denmark has learned to train its intelligence, and to train it so effectively, in the words of a state official, that intelligence has made the Danish people capable "of creating and successfully operating the several vast co-operative enterprises of the nation, and governing its own affairs and managing its own interests. , , , , in a democratic manner." In some ways Denmark has produced the first really independent farmers the world has ever known.

It has been said that Danish agricultural and social standards are not the outcome of accident, nor are they a free gift of nature. On the contrary, they are the achievements of those who possess and enjoy them, and are the result, in the opinion of competent observers, of the work carried on in the popular schools—at least are due more to the educational, than to any other single factor. This type of education plays a constantly increasing part in releasing, developing and shaping for creative purposes the intellectual forces of young Danish farmers. Before the advent of the People's Schools, by far the greater part of the intellectual capacity both of the individual and of the community in rural Denmark was undiscovered and unknown. The net result of the teaching and training in these schools is found in the realisation on the part of Danish farmers that education is not for a few years of childhood and youth, but that, on the contrary, it is co-extensive with the whole of life and of human experience.

The idea embodied in this movement was first brought forward in 1832, but the first school—a failure—was not established until 1844. Mr. Christian Kold laid the foundations of the first successful school in 1859; and from 1864-65 forward, that is from the time that Denmark met with crushing defeat in the war with Prussia, the movement has spread rapidly. It is estimated that about 300,000 young Danes, men and women, in the last 50 years, more particularly in the last 20, have passed through these schools, a number that comprises about 30 per cent. of the country's rural and village population. The underlying ideas which Bishop Grundtvig had attempted to put to use were: First, that the school should not be merely another fact-finding and technical institution, but rather a place of searching inquiry into the reasons why the individual, the community, and nature express themselves as they do. Secondly, the Bishop sought to create a school that would awaken a sense of responsibility in young Danish men and women, so that they might prepare themselves to be good citizens and play a worthy part in their several communities. Thirdly, instruction was to be by means of lectures, the students to live in intimate contact with inspiring teachers whose first object should be the developing of the personality of the student. By awakening this sense of responsibility it was hoped also to encourage the young men and women to be independent in their thinking, and in their work, and to give them a realisation of the duty they owed in developing the community and the national life. The schools, therefore, were designed to be centres of thought, the requirements of technical skill to be undertaken in the academies established by the State.

These schools demand teachers of high calibre, equipped to carry along the educational process without the use of text books; they also demand of the students an even greater achievement—an attempt on their part to use their own judgment, and to learn to reach sound conclusions independently of books. Moreover, these schools do not provide an avenue of escape from the responsibilities of work and life; but through them work is made intelligent wherever the young farmer finds it. By accepting responsibility, he is rescued from mere drudgery on

the land; and by training his intelligence the young farmer becomes a creative force not only upon the land, but in the co-operative enterprises of his own community.

These schools are entirely free from State control, being voluntary institutions under teacher control. Students attend voluntarily, for quite definite reasons—that is, the making of a serious approach to an understanding of the problems of nature and human nature. Students are admitted only after they have attained the age of eighteen, preferably after they have had four or five years' experience in farm work. They pay fees of from 70–80 kroner per month to cover tuition, board



The Silkeborg Co-operative Bacon Factory.

and residence—not a large sum, but enough to make them consider whether such education is a desirable way in which to spend their money, a very important point when one considers the cost of a modern educational system. The students receive no grades, credits or diplomas, neither are they given any guarantee of a paying job at the end of the course. There are no examinations, and there is no instruction for direct material gains. This lays a heavy task upon teachers and students alike, but the success of the movement demonstrates that these tasks have been welcomed. There is no discussion in the lecture rooms, but much discussion of the problems arising, later, among the students and with their instructors. The schools are equipped with libraries, laboratories and playgrounds, to a sufficient extent to maintain good, but not expensive, equipment standards. The winter term, for young men, begins on November 1, and lasts for five or six months; the summer term, for young women, begins May 1, and lasts for three to four months.

The real object of these schools is to lay a foundation for self-education, to help the young Dane to realise that education lasts as long as life. The various High Schools have no common programme, being autonomous bodies with a common name. The courses of study include Danish history, science, civics, and community development. While learning to think independently the young Danes also are shown that real independence can only be achieved in agriculture by co-operation, under the conditions that obtain today.

When the young Danes, men and women, leave the High Schools they return to the country to make their villages centres of human culture, to lend their intelligent aid to the creation of co-operative enterprises as instruments and not as ends, and to make their economic activities more effective—in a word, to put the theory of their school life into practice in terms of actual farm and community achievements. As a result, farming is regarded as a worthy, indeed, the worthiest of human vocations; the village becomes a dynamic centre for cultural and co-operative development; and Danish farmers, on the basis of carefully gathered and analysed facts, develop a highly intelligent and scientific agricultural technique.

In the old days, the High Schools usually had deficits; but at the present time the State helps to support them, by granting subventions. To receive a grant, a school must have been in existence for two years, and have had an annual enrolment of at least 40 pupils; and in addition it must demonstrate that it is doing genuine work of a valuable character. The grant goes in part to pay salaries, and in part to meet expenses of needy students, more than 1,000,000 kroner being paid on account of salaries and 600,000 kroner by way of grants to students, annually. In 1925, there were 78 People's High Schools and agricultural colleges in Denmark, giving instruction to 8,400 students. The High School at Elsinore, under the direction of Mr. Peter Manniche, has become particularly well known to educational experts throughout the world because of the generous provision it has made for the instruction of foreign students. Doubtless the Danish People's High Schools are not above criticism, but they have been a factor of great significance in raising the level of cultural and economic life in Denmark.

CHAPTER VI.

AGRICULTURE IN POLAND.

AGRICULTURAL CONDITIONS IN POLAND.

Within the limits of time available, a careful study was made of agricultural conditions in Poland. That country is chiefly agricultural in economic enterprises and outlook, and appears destined to become an important source of future food supplies, especially of animals and their products. Already considerable amounts of Polish bacon have been shipped to the British market. While of inferior grade compared with the Danish, nevertheless these supplies, along with shipments from the Baltic States, Russia and Holland, have satisfied a certain demand, and have operated in holding down prices for British consumers. Every opportunity was given by the Polish Government to secure the desired information on livestock production in that country. Not only Polish officials, but the farmers and great estate proprietors extended every courtesy and afforded all possible facilities in making the survey as comprehensive and valuable as could be expected under the conditions that the time factor imposed.

Poland has an area of 149,142 square miles. The census returns for 1921 place the population at 27,192,674, but it is estimated that it has now grown to about 30,000,000. In addition to ethnographical Poland there are considerable areas with minorities speaking German, Ruthenian, Russian and Yiddish. After generations of oppression and foreign domination, Poland is now attempting to weld into national solidarity the areas and populations held under the control of Germany, Russia and Austria up to 1918. As might be expected, the level of culture and of agricultural technique is higher in Posen than elsewhere, due to German administrative methods. Warsaw is the centre of Congress Poland, the area formerly held by Russia. In this territory much remains to be done in raising the general level of agriculture, and the same holds true in only lesser degree for the area tributary to Cracow, formerly held by Austria. As might be expected, there are wide economic discrepancies between these three great territories. Russian Poland has few railways, and the roads in many instances are mere cart tracks. Agriculture is backward; the production per acre low; and the peasant farmers live under primitive conditions. Even on those farms where production was fairly high before the War, there was little available for export, as the district was overpopulated. In 1913, 174,000 Russian Poles (exclusive of Polish Jews) left the country for the United States. There was an annual seasonal movement of 350,000 Poles to Germany, and 50,000 to other countries. Large numbers of peasants become migratory labourers, forming an important labour supply for the farmers of Germany, France and other countries. It should be added that Galicia was fairly well supplied with railways, owing to its rich mineral and oil resources, while Posen was well equipped with transportation facilities also.

Poland has been faced with a formidable task in reorganising her economic life since the close of the Great War and the cessation of hostilities with Russia. The country was ravaged as perhaps no other country in Europe. Russian and German troops between them destroyed 1,651,892 buildings, of which 70 per cent. were farm structures. An area four times the size of Belgium was devastated. Two-thirds of this territory was stripped of its railways and railroad equipment; the roads ruined, bridges and factories blown up, towns burned, and factory machinery and farm implements carried away. Poland has recently received some financial aid from the United Kingdom and the United States; but the country must receive further assistance to restore its internal finance and industry. Basing its monetary programme upon a plan formulated by Professor E. Kemmerer and an American Mission, Poland is making every effort to maintain a balanced budget and to restore the value of its currency. At the time of this survey (March, 1927) the zloty was worth about 12 cents, but its par value is equal to a gold franc. The Polish nation, it was evident, was



A herd of the famous Red Cows of Poland.

making a magnificent effort to restore industry and agriculture, and to improve the living standards of all the people. It is frequently forgotten that Poland was under alien rule for 120 years, her national culture savagely attacked, her legitimate aspirations assailed, and her economic solidarity broken. Russia, Germany and Austria pursued different economic and social policies, and it was, therefore, impossible for any administration at once to secure a programme of progress and reform. Personal investigation makes one marvel that Poland has been able to accomplish so much in so brief a period, when the terrible conditions imposed upon the people by the war are taken into consideration. Many problems of government and economic reform remain unsolved. Cleavages there are between political parties, but the people passionately cling to the belief that they can and will create a united Poland, restore her ancient glory, and make a great contribution to the common heritage of mankind. But only a truly national government can give that essential guidance to economic and social policy that will achieve enduring success.

Poland came out of the Great War, then, with enormous liabilities and few assets, save her soil and her people. Farms over immense areas were destroyed—the implements of production gone, and the livestock

dispersed. Many factories were in ruins; those that remained had no raw materials, and inadequate machine equipment. With the collapse of the Russian, German and Austrian currencies, the people lost their savings and all command of liquid assets. Nevertheless, an immediate effort was made to develop the natural industries of the nation along intelligent and constructive lines, particularly agriculture. In addition, the other industries are being reorganised, and some of them are making excellent progress. These include chiefly lumbering, coal mining, the salt and petroleum industries, iron and zinc mining and the textile industries. On the side of machine industry, notably in textile manufacturing, the loss of the Russian market has been severely felt. The railways are being operated efficiently, and important branch lines are being built. A great new port is being developed at Gdynia, near Dantzig. The most urgent problem in Poland today is the securing of sufficient capital to develop agriculture, not only on the farms but in the processing of its products. The development of agriculture is essential to give the masses the purchasing power necessary to absorb the products of machine industry, and to furnish adequate traffic for the railways.

The population of the country is rapidly increasing, and finds employment as follows:

Agriculture and forestry	64.3 per cent.
Mining and manufacturing . . .	14.9 per cent.
Trade and communications	9.5 per cent.
Other callings	11.3 per cent.

In the eastern districts, on the Russian frontier, the agricultural population comprises 73 per cent., and in only a few industrialised districts does it fall below 50 per cent. This is a high percentage, and compares with 48 per cent. for Denmark, 35 per cent. for Germany, and 8 per cent. for Great Britain. In Silesia, the most highly developed industrial territory, 49 per cent. of the people are employed in mining and manufacturing. Of the total area of the country, 49 per cent. consists of arable land, and of this 48.6 per cent. is devoted to the production of cereals and other field crops. Meadows (hay) constitute 10.2 per cent., pastures (grass) 6.7 per cent., and forests 24.1 per cent. The balance is used for miscellaneous purposes, or is as yet unclaimed waste land. The following figures present the necessary data on crop production for the year 1925-1926:

Sowings: Hectares (in thousands)	Reapings:	
	Quintals	(in thousands)
Wheat, 1,094	15,730, or 14.4	quintals per hectare
Rye, 4,904	65,385, or 13.3	" " "
Barley, 1,224	16,773, or 13.7	" " "
Oats, 2,577	33,115, or 12.8	" " "
Potatoes 2,359	291,061, or 122	" " "
Sugar beets, 172	26,872, or 214	" " "

Poland produced the following percentages of world supplies of grain in 1925-26:

Wheat	1.5%
Rye	14.6%
Barley	5.1%
Oats	5.0%
Potatoes	21.9%
Sugar beets	7.0%

The surplus of field crops available for export in the same year amounted to:

Wheat	124,000 metric tons
Rye	1,478,000 " "
Barley	306,000 " "
Oats	387,000 " "

The exports of animals and their products in 1925-1926 were:

Horses	33,107 head
Cattle	116,700 "
Pigs	870,700 "
Geese	1,138,000 "
Fresh meat	34,800 tons
Eggs	27,000 "

LIVESTOCK PRODUCTION IN POLAND.

Professor Tygmunt Telistawski, representing the Ministry of Foreign Affairs, made arrangements along with Mr. Stanislas Rosciszewski of the Ministry of Agriculture, to afford all facilities for inspecting the Polish agricultural economy. The latter gentleman accompanied the members of the Commission over a considerable part of the territory surveyed, and then arranged for further personal escort and interpreters. Much of the territory was covered by automobile; but in the northern districts, and later in the far east, the railway facilities were utilised. A careful survey of agricultural conditions was made of the districts to the south, west and north of Warsaw, and farms were visited in the vicinity of Lowitz, Kunno, Krosniewice, Kłodawa, Koto and Kaliz. It was the opinion of the delegation that the policy of the Polish Ministry of Agriculture was of the most efficient, scientific and progressive type. It was clearly established that the future welfare of the peasant farmers was being earnestly and seriously considered, and what was of even greater importance, in the most enlightened and intelligent manner. This was particularly true in connection with the problems created by the large estates, referred to in more detail later.

An astonishing degree of efficiency and scientific management was found on the large estates. Exceptionally important work was being done in improving the production of livestock, in experiments in soil culture, and in the economic management of the farms. This work largely relieved the State of the necessity of providing experimental farms; and a thorough appreciation of the need for a policy of caution in interfering with the activities and status of the large estate owners was impressed on the mind.

At the time of inspection, men and women were busy on the land, spreading manure and artificial fertilisers. Nitrates are imported from Norway and South America, but a process has been recently perfected

for manufacturing them in Poland, which is expected greatly to reduce the cost of this important agricultural necessity. Some ploughing was being done, and barley was being seeded. The rye was up about three inches, and the wheat about one inch, both having been sown the previous fall. With regard to Poland's domestic agricultural economy, the crops may be placed in the following order of importance:

Sugar beets.

Rye.

Potatoes.

Barley.

Oats.

Wheat.

It was interesting to observe from discussion with a peasant farmer that he made most money by selling beetroot and poppy seeds to a seed merchant for export, chiefly to England. When rye and wheat are offered for sale, they are usually disposed of through a farmers' bank, in which some of the farmers have a financial interest. These institutions are sometimes referred to as co-operative banks, although they are founded on a joint stock basis. Such a "bank" also deals in coal and other farm supplies.

The following large estates were inspected:

The Raszenski estate, at Yasien by Czemjrin;

The Siemieuski estate, at Racot near Koseiaw;

The Szczepaniak estate, at W. Skowki by Koscecin;

Mielzynski, at Pawtowice;

Mielzynski, Twno by Kostvyn;

Gloeksin, Stryeliowo by Gniezno;

Mycielski, Gatowo by Szamotuly.

The land is well cared for, but at great labour cost, having been farmed for centuries. Field husbandry is the fundamental factor in Polish farming. The cattle are held in large numbers chiefly to maintain fertility in the soil, and the manure is regarded as of even more importance than the production of beef, milk, pork and other products. On the large estates the peasant labourers are given the use of two or three cows, a few pigs and chickens which they may regard as their own property, but on the strict understanding that the manure shall be delivered for use on the estate.

Heavy machinery was in extensive use on the big estates, especially steam ploughs and tractors. Gasolene is not used, coal being secured from Silesia. Light railways were found on some of the larger estates, being used to transport fertilisers and grain crops, roots, etc. An important feature of the operation of the estate is the construction of mills, distilleries, etc., for the processing of farm products. This aspect of their management and operation is discussed elsewhere. One could not fail to be profoundly impressed by the calibre of the men met on the big farms, who have done wonderful work in raising the level of Polish scientific agriculture. The problem of dividing the large estates among peasant proprietors, and the consequent social results, is discussed

elsewhere. But it may be said here that, limiting judgment strictly to what was personally seen and observed, the large estate owners are Polish patriots and scientific farmers. They take immense pride in the production of quality livestock, horses and agricultural products. Although there is evidence of wealth, past perhaps, more than present, among them, not a single automobile was found, and that despite the excellent roads in that part of the country. They are not unmindful of their duty to the peasant labourers, for whom they provide schools, excellent living quarters, medical service, etc., as well as a decent livelihood for their families.

In the territory inspected, the cattle were strictly of the dairy type. Some especially fine herds of the original Red Polish cow were seen, of great credit to their owners, and a matter of national pride. The most numerous breed, however, was of the Holstein-Friesian type, exceedingly well bred from imported bulls from Germany and other countries. To a Western Canadian, so many large herds of pure-bred cattle of this type was a wonderful sight. All the cattle on the large estates are well bred. Strict attention is given to feeding, a well-balanced ration of roots and byproducts being utilised, including a liquid byproduct from alcohol manufacture, which is piped and pumped into the feed troughs, and mixed with barley and chop. The proprietors are rewarded by a very high production of milk and butterfat. The greatest care is taken with the record of production of each animal, the daily results being carded over the cow. At the Government breeding stations were found very fine types of Holstein bulls and young cows.

The country has splendid natural features in the form of great expanses of meadow and pasture land. In 1924, Poland possessed about 4,000,000 horses, 8,800,000 cattle, 5,500,000 pigs, and about 2,500,000 sheep. Poultry holdings were estimated at 50,000,000. Taking the country as a whole, stock-raising is chiefly in the hands of the peasant proprietors, only about 15 per cent. of the stock being found on the large estates. Before the war, large importations of stock came into the country from Hungary, the Ukraine, and some other countries. Russian steppe cattle and pigs could be sold more cheaply than the products of home production. Under these conditions, the large estates made little profit in the production of beef cattle, and the business was chiefly confined to the smaller farmers, who fed their stock on the byproducts of the farm. This led to the introduction of a wide variety of stock, and the absence of definite breeds. In the western districts, however, stock-raising was conducted on a more scientific basis than in the eastern territories.

The chief cattle areas are in the south, in the Cracow territory, and the western part of the county of Lwow. Here the natural conditions are favourable for the production of livestock. In the southern part of Poznan large numbers of cattle are raised, also. In the former Russian provinces, owing to the importation of cheap steppe cattle from Russia, the peasant farmers produce few beef animals and concentrate on dairying.

While the export trade in pigs is important, yet it does not reach the former pre-war average of 1,500,000 per annum. The existing slaughter houses can deal with 500,000 pigs yearly. In addition to the slaughter houses several bacon factories have been erected, and several others are in course of construction. While Polish bacon exports to the British market have been considerable, the low prices secured have discouraged the larger producers. One large farm was visited where the proprietor gave the information that the pigs were bedded outside, summer and winter. Owing to the great expansion of dairying, it is possible for Poland greatly to increase its pig production.

It is difficult to classify Poland's swine holdings, owing to the unsystematic methods applied in breeding on peasant farms. In Poznan the better German type, crossed with the Yorkshire, predominates. In Galicia the Yorkshire and the Cornwall breeds, along with the sharp-eared, undersized Polish breed, are found. Owing to the heavy production of potatoes, the extent of dairying, the large amount of the by-products from sugar beet factories and potato distilleries, the swine industry could be developed under exceptionally favourable conditions. The government is taking steps, in co-operation with the curers, to raise the standard of Polish export bacon. The export trade in agricultural products, however, has been greatly hampered in the post-war period due to the hard internal conditions of the country. All restrictions on agricultural exports were finally removed, which gave great encouragement to producers. The distinct impression received by personally examining conditions on the land, was that the Polish farmers are making every effort to increase production and to improve living standards.

INTENSIVE AGRICULTURAL ORGANISATION.

As Poznan is perhaps the most advanced agricultural territory of Poland, both from the standpoint of field husbandry and the scientific production of livestock, a careful survey was made of farming conditions there. Poznan has a total area of 26,603 sq. klm., being the eighth in size among the sixteen Polish provinces. It has a population of 1,974,057, of which 34.2 per cent. live in the cities, and 65.8 per cent. live in the country districts and on the large estates. The density of population is 74.2 inhabitants per sq. klm., as compared with 70 to the sq. klm., in the entire Polish State. Of the entire area of the province, amounting to 2,366,900 sq. ha., 90 per cent. consists of arable land belonging to 173,422 owners. There are a large number of very small farms of two ha., and under, others of from 2 - 5 ha., 59,912 farms of from 5 - 20 ha., and 2,113 farms of from 100 - 1,000 ha., and upward. The large estates are of basic importance in the agricultural economy of Poznan, comprising as they do an area of 781,620 ha., as compared with 596,902 ha., in farms of from 5 - 20 ha. These farms consist of arable ground, meadows, pastures, orchards, gardens, forests, and swamp lands; and under the scientific methods that obtained during the German régime the utmost possible value was secured from each type of property. It should be added that the tiny farms of 2 ha. provide only a secondary occupation for the owners, as the peasant-holders earn a considerable

part of their livelihood by working on the larger farms. The type of farm most frequently met with in this province is the peasant middle sized property, comprising 30.5 per cent. of all ploughed lands. The large estates occupy 49.5 per cent. of the total agricultural territory. Of the lands held by the large estates, 30 per cent. is covered by forests, therefore the large estates control only 43.8 per cent. of ploughed land, and the smaller properties (exclusive of those of 2 ha., and under) occupy 54 per cent. of the ploughed lands. On the farms of 100 - 1,000 ha., the percentage of purely arable land is high, but when the estate reaches 1,000 ha., and upwards, a large percentage of the property consists of forests. The greater part of the farm land consists of arable ground, orchards and gardens, 7.7 per cent. comprises meadows, and 2.6 per cent. pastureland. It should be added that the forest percentage of the province, 18.1 per cent., is less than the average for the whole country, which reaches 24.1 per cent. The State and Church hold, respectively, 294,421 ha. and 30,757 ha., of which 198,616 consists of forests. The area of the large properties is divided, with respect to its use, as follows:

Arable grounds	697,866 ha. or 64.4 per cent.
Meadows	83,494 ha. or 7.8 per cent.
Pasturelands	25,045 ha. or 2.3 per cent.
Orchards	3,259 ha. or 0.3 per cent.
Gardens	3,624 ha. or 0.3 per cent.
Parks	3,294 ha. or 0.3 per cent.
Forests	211,440 ha. or 19.5 per cent.
Ponds and lakes	23,194 ha. or 2.1 per cent.
Buildings and roads	18,614 ha. or 1.7 per cent.
Swamplands, etc.	14,004 ha. or 1.3 per cent

Agriculture, because of the light character of the soil, and centuries of cultivation of the land, must be carried on intensively from a technical point of view. This is made clear from the amount of artificial manure used, which in normal times before the war, when it was possible to secure the quantities needed, amounted to:

Potash salts	482,104 quintals
Nitrates	657,000 "
Sulphur ammonia	371,000 "
Other azotics	104,000 "
Superphosphates	1,870,000 "
Phosphates	1,870,000 "
Bone manures	122,000 "

The maintaining of the fertility of the soil is the first object of farming in this province, and this fact explains the weight given to the keeping of dairy cattle. Because of the large numbers of cattle held in the province, there has been a considerable development of the butter industry. Swine are profitably kept on the large and small farms to dispose economically of the waste products of the other phases of farming—whey, and the byproducts of sugarbeet and potato processing. Agricultural machinery can be used economically on the larger farms and estates, and in many respects it was found that a high development in industrial farming had taken place. Of the larger machines found in use, the principal ones consisted of steam ploughs, seeding and harvesting machinery, threshing machines, and dairy appliances.

The chief field crops are wheat, rye, barley, oats, potatoes, sugarbeets and clover. Because of the scientific development of agriculture on the large farms the output per hectare is considerably higher than in the rest of Poland, or in the neighbouring German provinces. In 1921 the province had 859,569 head of cattle, 273,744 head of horses, 925,344 hogs, and 324,171 sheep. Poultry is an important part of the system of production followed. Livestock holdings were seriously reduced during the World War, but are rapidly regaining their former position.

PROCESSING AGRICULTURAL PRODUCTS.

It was striking to observe the extent to which processing of primary farm products is carried forward on the large estates, and in nearby villages and towns, in this part of Poland. From the Canadian point of view it was considered significant that this processing was largely under the control of the farmers themselves, and in many instances took place on their own property. On the large estates were found various manufactories, providing the finished product, not only for consumption on the farm, but for export to other districts in Poland and elsewhere. Because Poznan is a heavy producer of the sugarbeet, the sugar industry has made considerable progress there, although it has not as yet reached the pre-war figures. In 1913-1914, 2,438,194 tons of sugarbeet were used, giving a production of raw sugar amounting to 350,050 metric tons. In 1923-1924, the production stood at 193,743 tons. The large farmers interested in this industry are organised in the Sugar Commerce League, and finance their undertakings through the Bank of the Sugar Industry. The distilling of alcohol is also an important aspect of secondary production in the agriculture of Poznan, because of the exceedingly large yields of potatoes. In 1912-1913, there were 569 distilleries in the province, using 450,000 tons of potatoes. The production of alcohol was reduced during the war years, but it also is now overtaking pre-war figures. Some of these distilleries are found on the farms belonging to the large estates. While the plants are quite modern and well organised from the business standpoint, they are not as a rule built for large scale production, except where they are established in the towns for the utilisation of the products of a wide territory. The commercial interests of the alcohol producers are taken care of by an organisation of their own. Of a similar character is the starch industry of Poznan, depending for its raw material on the potato crop. In 1915, there were forty-nine agricultural starch industries on the large estates, and five industrial starch factories, with a combined annual consumption of 369,700 tons of potatoes. These industries produced 30,800 tons of starch, as well as certain other products, including dextrine and syrup. There are large numbers of drying establishments, both industrial, co-operative, and agricultural, processing potatoes into certain special products. This industry also is organised to protect its peculiar interests. While one must be careful in reaching conclusions drawn from foreign experience, it may be said that Poznan affords a significant example of control of basic farm products by the producers themselves, who follow the product from the field through the manufacturing process to the

markets, both domestic and foreign. True, these conditions of manufacturing on the farm cannot be duplicated in Canada; but Poland, in the interesting manufacturing activities in which its larger farmers are concerned, points the way for a similar, if not parallel, development in the Dominion. It is also important to notice that this Polish province, by diversifying economic interests close to the land, finds an outlet for the utilisation of the labour of its youth, which otherwise would be lost to the community. In addition, it gives the Polish young men and women opportunities to develop scientific and technical talents that could not otherwise find scope for use in primary farm work.

THE LIVESTOCK BREEDING INDUSTRY.

It was found that breeding was carried to a high point of development on the large estates, and at other centres established by the Government. Horse breeding is an important industry, originating from the demands of the German army for horses to be used in its cavalry divisions. The German government established two studs in the province; and made use of the thoroughbred to improve the native breed, and thus produced a type answering the army aims. The war made heavy demands upon supplies of horses in Poznan; and after the close of hostilities horse breeding in this province did not rise to its old level. Horses suitable for the army are also widely used on the farms; and being somewhat light in weight are employed in greater numbers than otherwise would be necessary. The government cooperates by establishing state studs, and also carefully supervises breeding on private estates. The larger farmers have established an association to protect the interests of breeders of high standard horses of the army type. This association, like all other associations of breeders in Poznan, is directed by that unique agricultural body, the Poznan Chamber of Agriculture.

With respect to cattle, the province is interested as a whole chiefly in black and white cattle of Dutch origin, although in the southern districts some of the larger farms specialise in the production of the native red cattle breed. The red cattle have been native to the country for many centuries, and are very hardy and resistant to tuberculosis and other diseases. However, their production of milk is smaller than that of the black and white breed, although the butter fat content is as high as 3.8 per cent. The red cattle comprise about 10 per cent. of the holdings in Poznan. The Oldenburg race forms the basis of the black and white breeds, and to a lesser degree, the Eastern Friesian and Eastern Dutch breeds, introduced into the province about the middle of the last century. The Oldenburg breed has not done as well in the climate and on the soil of Poznan, as the East Friesian, and the cattle breeders are more and more developing the latter type. Importations of this breed, which were comparatively high before the War, have since almost ceased. At present the aim of the breeders is to improve the breed by carefully rearing the young cattle, by the proper selection of cows, and by making use of good sires. The cattle as a whole consist of mixed breeds of East Friesian and East Dutch, although some of the estates specialise in the production of purebreds

of both types. Up to 1914, Poznan produced a large number of butcher cattle, there being a good market for the meat in the western industrial centres of Germany. Since the War, breeders have become more interested in milk production, and have changed their operations in that direction. As a consequence of feed shortage during the War years the breeding of cattle seriously suffered, as likewise the health of the animals. There is now a great improvement in this respect, as is evidenced by the low percentage of tuberculosis, which in 1924 had dropped to 5.64 per cent. It may be added that the cattle of this province are always threatened by tuberculosis, because they are kept in stables during the greater part of the year. Farmers interested in cattle breeding are organised into a society which keeps careful records of milk tests, and of the health of the different herds. The society organises cattle markets and fairs annually, which have proved valuable in educating the farmers in the right types required.

Hog breeding is developing in this province parallel with the development of dairying. The two leading breeds found on the farms are the German large white and the Yorkshire; the Cornwall being reared in only a few places. The first of these types enjoys excellent health, has great resistance to disease, and is very prolific; but it grows slowly. It is becoming customary to cross the German, or the so-called noble native race, with the Yorkshire. As in Denmark, the breeders are organised to raise the stock standards of the industry. Exceptional boars reared by the best producers are placed at different breeding stations, which are organised as small farms.

Poznan practically went out of sheep breeding before the War; but at present great progress is being made with respect to both quantity and quality of the flocks held. The most common breeds are the Merino, the Rambouillet, the Mele, and the native breed. The Mele is a cross between the Merino and Leicesters.

AGRICULTURAL EDUCATION IN POZNAN.

Agricultural education is carefully organised in this province, and includes both professional training and instruction of a primary character. The University of Poznan has a special faculty devoted to agriculture and forestry. In addition there is a State Agricultural School at Bojanowo, of college grade. Primary agricultural training is under the direction of the Chamber of Agriculture. These various educational bodies specialise along their own lines, but in general emphasise the technique of agriculture as well as lay a foundation for a good general training. The primary schools give courses covering two winter periods, lasting from November to the end of the following March. The primary schools do not operate experimental farms, although they have a certain amount of land for the production of feed for the live stock. The cost of management is low, and they appear as far as can be observed to be yielding fair results. The programme covers the activities necessary for small farming, such as the proper culture of meadows and arable lands, the selection of good seed, the use of artificial manure, breeding, farm building plans, chemistry,

physics, hygiene, and other subjects. As in the Danish Folk Schools, an attempt is made to turn out not only good farmers but good citizens. The teachers, in addition to their school duties, organise conferences on educational subjects for the different agricultural societies. They also act as judges at seed fairs, give instruction on the proper control of experimental fields, and in a general way help in improving conditions of the farming community. In 1925, the Chamber of Agriculture possessed thirteen schools of this type with 820 pupils, as well as two household schools for peasant girls. The girls are taught the various branches of household management, and are also given instruction in cultural subjects.

THE CHAMBER OF AGRICULTURE.

The supervising and directing body of agriculture in Poznan is the Chamber of Agriculture, organised under the Prussian law of June, 1894. Its funds are secured from taxes levied upon farms of a certain size, and from fees charged for the rendering of specific services to the agricultural community. The chamber is an autonomous body, controlled by electors who pay taxes toward its support. These electors select a certain number of deputies, who compose the council, or the general governing body. The council in turn selects the managing committee from its members. The committee elects the president, who has control of all paid officials. The president must own landed property within the sphere of the chamber's activities, to guarantee that he has a genuine interest in agricultural problems.

The chamber, at the request of the government, must provide expert advice on all questions connected with farming in the territory. Its work consists chiefly, however, of organising the community on an independent basis, with a view to improving the conditions of farming. It is interesting to notice that the government believes that certain work, notably primary agricultural education, can be carried on more cheaply and effectively by local authority, than by the state. This explains why the chamber has charge of special educational work in Poznan.

The chamber gives expert assistance to farmers on all kinds of agricultural problems; institutes measures for combating plant and animal diseases; attempts to improve seed production and selection; supervises the breeding of cattle; and gives instructions on the proper housing of pigs and sheep. It also performs certain functions for private companies processing agricultural products. Thus, it will be seen, the Chamber of Agriculture performs many of the duties undertaken in other countries by the state.

DISTRIBUTION OF LAND IN POLAND.

The arable land of Poland is distributed very unevenly among the Polish people. More than half of the cultivable land is in the hands of small peasant farmers. Small holdings are general in Little Poland (Galicia), and in the former Congress Kingdom. In the eastern and western borderlands large estates predominate, particularly in Poznan.

and Polesie, in which counties are found one-quarter of the large estates. Sixty-four per cent. of the total area consists of small properties under fifty hectares each, numbering 3,298,500 farms. Of these, 1,111,400 are very small farms of two hectares and under; 1,010,400 have an acreage of from two to five hectares; 1,069,300 have an acreage of from five to twenty hectares; and 107,500 have an acreage of from twenty to fifty hectares. There are 20,664 large estates, of which about 3,000 have an acreage of between fifty and five hundred hectares. In addition about 4,000,000 hectares are held as large public estates, 75 per cent. being forest land. Of the total area of private land 38 per cent. is under timber. Thus, the large properties cover about 6,000,000 hectares, of which area 4,000,000 ha. consist of arable land. It may be added that about 50 per cent. of the arable area on the large estates is under grain crops. The crop yield on these estates exceeds that of the small farms by an average of two quintals per hectare, this excess being a vital factor in supplying not only domestic requirements but in building up the export trade of the country. The smaller farms market about 25 per cent. of their produce, the balance being utilised for feeding livestock. But, as has been stated above, there is little or no scientific development of livestock breeding on peasant farms.

It follows that the policy of splitting up the larger estates among peasant farmers, under the Agrarian Land Laws, is of special significance not only to the social but to the economic welfare of the nation. Before the War, estates were being broken up by economic pressure. Sales were voluntary on the part of the estate owners, and usually the land fell into the hands of financially sound farmers, who were able to apply proper methods of cultivation. One should add, however, that this agrarian legislation has not accelerated, up to the present time, the breaking up of the large estates, the process having been carried much further during the years 1909-1921.

The land question in Poland became serious with the enfranchisement of the peasants, which provoked a social revolution that affected agricultural life throughout the whole of Eastern Europe. The Polish peasants did not, however, secure economic freedom with their enfranchisement; in many instances, as landless men, they were thereby reduced to poverty. Moreover, it has been an ineradicable custom of the Polish peasant to divide his farm among his numerous sons, with the result that the farms became too small to afford the family a living. It is calculated that in the central provinces before the war there were about 600,000 families in this position. From this surplus population the large estate owners were able to secure abundant labour, permitting them to work the land intensively and to hold their former position in the forefront of Polish agriculture. It was customary to pay the farm labourers in kind and not in money; the peasants, therefore, have suffered less from post-war currency conditions and consequent lowering of wages than most other classes. Nevertheless, the economic conditions for thousands of farm labourers and peasant farmers were so difficult that they were forced to emigrate. At the present time nearly 500,000 Polish peasants are permanently settled in

France, being employed on the farms, in the mines, and in the factories. The peasants who emigrated to America in some cases returned to their native land and with their earnings bought small holdings. As a consequence, more and more land was normally passing into the hands of the peasant class up to the outbreak of the Great War. Indeed, special banks had been launched to advance credit to purchasers' associations and a peaceful agrarian revolution was slowly and inevitably taking place throughout large areas of the country.

As is well known, one of the most far-reaching results of the War was the seizure of the large estates in Russia, Latvia, Lithuania, Czecho-slovakia and elsewhere, by the peasant class. Whether by revolution or by legal process, throughout the whole of Eastern Europe there were sweeping measures of land reform from the effects of which conditions in Poland could not permit that country to escape. Particularly after 1920, when the Bolsheviks invaded Poland, it became essential seriously to attack the problem of land reform and attempt to give the landless peasants the opportunity to find economic freedom. Thus, in that year, there was introduced into the Polish Diet, a far-reaching Land Reform Bill, which set a maximum limit upon the amount of land that might be in the possession of a private individual, the State, the Church, or any communal body. It is important to observe that this maximum is not fixed, but varies from district to district, being greatest in those areas where the landowners represent the Polish element. By this policy all land, above a fixed maximum, must be divided among the landless peasants, under the direction of the state.

There was such strong opposition to these sweeping changes that even Premier Witos, leader of the Peasant Party, could not quickly bring the Act into operation. The opposition came not only from the Polish gentry, but also from leading Poles who were concerned with its economic effects upon the stability of the state. It was pointed out that even should all available land be divided, there would not be enough to satisfy the urgent demands of the peasants; and that it was as important to establish a minimum as to fix a maximum of land ownership, otherwise the great natural increase of the peasant class, along with the custom of dividing the farm among the sons, would quickly produce as bad conditions as have hitherto prevailed. Attention was also directed to the fact that improved methods of cultivating the soil were possible only on fairly large farms; and that the small farms could be made a paying proposition only with the spread of education and the development of co-operation upon the Danish model, or some similar plan. Since a great part of Polish exports is derived from production on the large farms, and since this surplus is essential to maintain fiscal stability, it was argued that it would be dangerous to hasten unduly the process of splitting up the big estates. The very small farm in Poland is as much of an anachronism as the small handicraft industry in this day of giant industrial production. The leaders of the Polish nobility maintain that peasant farming, on this basis, can not hope successfully to compete with the highly industrialised farming of Canada, and other nations.

While there is much to be said for this view, yet the irresistible claims of social development remain an outstanding fact in Poland as well as in the other countries created by the peace treaties. It would appear, therefore, that sooner or later, the large estates must be reduced in size, and the surplus land pass into the possession of the peasants, giving economic advantages comparable with their present political freedom. Indeed, the price to be paid will probably be much lighter than the cost of peasant enfranchisement, and that was paid for by the landlords in its time. It is only necessary to add here that a new Land Reform Bill was passed in 1925, which will probably mark the beginning of the actual process of land transference in Poland. This, however, is a legal and not a revolutionary action, although it sets the seal on the work of a great social revolution. It does not necessarily mean the passing of the land-owning gentry of Poland, but it does mean a serious diminution of their social and political power. Many of them were ruined by the War; all are taxed heavily, especially under the currency reform measures of 1924. As in Great Britain and other western nations, the great landowners will begin to play a larger rôle in the financial, mercantile, and business life of the country, enriching the middle class with their traditions and culture. Although their rôle as great landlords may soon be over, in other spheres of activity they will lend new vitality to the economic life of the state.

SOCIAL AND EDUCATIONAL CONDITIONS.

The most radical change in Polish social conditions affecting the rural class since the close of the War, is found in the development of agricultural schools and the carrying forward of scientific experiments. Before the War there were three higher agricultural schools, located in Lwow, Cracow, and Warsaw, and several secondary schools. Elementary instruction was given in twenty-three schools in Congress Poland and fifteen schools in the territory surrounding Cracow; but in Poznan there was no elementary instruction in agriculture at all. At the present time the Polish Republic has five higher agricultural schools of a university type, situated in Warsaw, Lwow, Cracow, Poznan and Volno. What may be termed middle school instruction is now given in six agricultural schools and horticultural schools, all of which are placed at strategic centres throughout the country.

The high and secondary schools are under the direction of the Ministry of Public Enlightenment; elementary instruction is under the guidance of the Ministry of Agriculture. At the beginning of 1925, Poland had ninety-eight secondary agricultural and horticultural schools, of which seventy-two were for boys (2,301 pupils) and twenty-six for girls (530 pupils). Seven of these schools are maintained by the Government, sixty-three by the community, twenty-five by social institutions, and three by private persons. The law of July, 1920, regulates the relation of the government to agricultural elementary instruction. Under this law, which attempts to take into consideration local conditions, organisation of the schools, for the most part, is in the hands of the people in each district; and the duty of maintaining the schools rests upon the local community. It was the intention of the

law to place at least two elementary schools in each district, one for boys on farms of 36 hectares, and another for girls, on farms of 18 hectares. The necessary land is provided by the Government from the public domains, or from private properties designated for allotment. These farms are handed over to the community unions in perpetuity, at a small rental per annum. The law also deals with the question of finance, the interior organisation of schools, and the relation between the community and the schools. In 1925 about 2,265 hectares of land were available for practical instruction in rural elementary education.

Aside from formal education, there is a growing movement in Poland in behalf of agricultural organisation along scientific and technical lines. There are three types of agricultural organisations in the country: Chambers of Agriculture; Agricultural Societies; and societies of an economic character for great landowners. The Chambers of Agriculture are found in Poznan and in Upper Silesia. These chambers are self-governing economic institutions, designed to encourage the development of agriculture, and are based upon previous German legislation. The agricultural societies in the other parts of Poland have as their chief aim the cultural improvement of their members, combined with scientific instruction. The smallest unit is an agricultural club, consisting of the farmers of one or more villages. The members meet together and discuss methods for the improvement of agriculture, including such subjects as cattle breeding, the selection of pure seeds, new types of machinery, etc. The third type of organisation is of the nature of a joint stock company, organised by the great landowners to serve their economic interests. The smaller landholders have established certain commercial organisations also, based upon the principles of co-operation. As yet, however, there does not exist in Poland any general body representing agriculture as a whole. The Central Union of Agricultural Organisations, with headquarters in Warsaw represents the great properties for the most part. There is also a peasant association with headquarters in Warsaw, under the title of the Polish Union of Agricultural Organisations and Circles.

Experimental agricultural work is under the direction of the Polish Scientific Institute of Agriculture, formed in 1924 by the amalgamation of two institutions of a similar type. This institute is the central experimental and scientific station of Poland, and its researches are directed by professors from the different universities. At the present time the institute carries on researches in agriculture, plant breeding, animal feeding, animal breeding, horticulture, solid physics, and plant diseases. At the institute, there is also a department specialising in cattle diseases and the production of sera. For its experimental work in field husbandry it has four farms, comprising 1,200 hectares. Important scientific experiments are also made at stations in different parts of the country, and at the agricultural high schools. In order to bring the results closer to the farmers, the Ministry of Agriculture has reserved fifty holdings, consisting of 175 hectares each, for model farms. At the present time eight of these are in operation.

FINANCING POLISH FARMING.

As Poland is predominantly an agricultural country it has long boasted financial institutions devoted to the service of farming. These may be classified as follows: Land Credit Associations, Mortgage Banks, Savings Banks, Joint Stock Banks, which guarantee short-term credits, and Co-operative Credit Societies.

The Land Credit Associations are among the oldest economic institutions of the country. At present there are three in operation, in Warsaw, in Poznan and Lwow, respectively. In Pomerania and Upper Silesia, there existed during the period of German control certain credit associations whose head offices were in Germany. All these institutions are composed of groups of landowners, each of whom is himself a borrower. Loans are made on mortgages and the capital is raised by the issue of bonds. The rate of interest charged on such loans was low, and the principal was liquidated on the amortisation plan. Loans were usually made up to 50 per cent. of the value of the property, except in the case of the Poznan association, which made the limit of loans 66½ per cent. of the property value. The principle of joint and several liability was enforced. The control of each association is in the hands of its members, who exercise their authority in the annual general meetings, which approve the reports and decide on matters of policy. The executive authority is vested in a committee, and the Board of Directors. The Land Credit Association of Warsaw has, in addition, a committee representing the bondholders. The costs of administration are met by the members, who pay a special contribution for that purpose, the balance being secured from the interest paid on loans.

The leading Polish land credit association is a Warsaw institution, established in 1825. Its chief purpose was to give landowners an opportunity of freeing themselves from the heavy debts contracted during the protracted wars of that time. By means of its loans it provided an effective economic instrument for increasing production on the large estates. From the time of its establishment to the outbreak of the Great War this association had issued thirteen series of mortgage bonds, at rates of interest varying from 4 to 5 per cent. The success of the institution led to the establishment of similar organisations in Galicia, in Poznan, and elsewhere.

Up to the outbreak of war, these Polish credit associations functioned efficiently, despite political and economic crises. Their bonds were quoted at or above par; and the borrowers on the whole met their obligations satisfactorily. The position changed materially during the period of inflation, 1919-1923. The debtors, as was natural, were eager to discharge their mortgages in depreciated currency. Consequently further bonds could not be floated because investors were unwilling to place their savings in securities that were so unstable. As a consequence, it was only after the introduction of a stable currency in 1924 that these associations could begin to make loans again. By that time, however, it was necessary, owing to the shortage of capital in Poland, to raise the rate of interest to 8 per cent., and to issue the bonds in terms of dollars. In addition, the claims of the associations had to be expressed in terms of the new currency. The Poznan credit

association has outstanding claims which are redeemable in rye to the extent of 173,000,000 cwt. At the present time these associations are not able to provide credit to their members unless a market for their bonds can be found abroad.

Before the war Poland had also a number of private and government mortgage banks, which secured their working capital by the issue of bonds. The most important of these were the Land Bank of Galicia, established in 1882, and the Farmers' and Landowners' Banks, operating in the former Russian districts. In Poznan there were semi-official institutions, organised almost exclusively for financing German colonisation, in the provinces of Poznan and Pomerania.

The Land Bank of Galicia at one time furnished credit to all the economic interests of that territory, but more particularly to agriculture. It was succeeded by the National Economic Bank in 1924, which was established with a capital of 34,000,000 zlotys. It was hoped that this bank would be able to grant long term credits by means of issuing mortgage bonds guaranteed by the Treasury. Not much was accomplished, however, in this direction, the bulk of the credits being in the form of short term loans made to the larger estates. In addition, the bank discounts bills drawn by farmers in settlement of purchases of artificial fertilisers; and it guarantees the obligations of agricultural, commercial and industrial institutions in their business abroad. In 1925, these guarantees amounted to more than \$20,000,000. This bank ranks next to the Bank of Poland as the strongest financial institution in the country.

The State Agricultural Bank was established in 1920, but was reorganised in 1924. Its chief function is to promote land settlement by peasant farmers. Its capital is 25,000,000 zlotys, and it can issue mortgage bonds up to thirty times its combined capital and reserve. In addition the bank receives various subsidies from the Government, and administers all government funds set aside for farming purposes. It has made, up to the present, very few long term loans; but it has purchased large estates to the value of 7,000,000 zlotys, to be divided among small farmers. At present it is most active in financing short term loans to peasants and the larger landowners. In addition to the financial institutions described, Poland has several private mortgage banks, the most important being the Wilno Land Bank, which has issued a considerable amount of mortgage bonds. The most important savings banks are the Government Post Office Savings Banks, part of whose funds have been used for farming purposes. In addition there are 197 town and district savings banks and some 250 communal loan and savings societies in the former Russian territory, which before the war made loans on urban and rural real property. At present their new business transactions are very limited, and it is probable that these banks will be completely reorganised.

The outstanding joint stock bank is the Bank of Poland, which does a large business in furnishing credit to farmers and to agricultural industries. Recently the charter of this bank was amended, to permit it to discount six months' bills drawn in settlement of purchases

of fertilisers, farm machinery, etc. The Bank of Poland distributes credit to farmers mainly through the nine private banks comprising the Union of Agricultural Banks. The most important bank in this union is the Sugar Industry Bank of Poznan. This bank finances the Polish sugar industry, and in recent years, for that purpose, has negotiated heavy loans and credits on the London market.

The co-operative credit societies take care of the financial interests of the smaller farmers and landowners. They are of two types: the popular banks, and the Stefczyk banks founded in Galicia in the early years of the present century by Dr. Francis Stefczyk. The popular banks originated in Poznan where, before the War, co-operative activity flourished. These are the more important institutions carrying on business in rural districts with headquarters in the towns; the other banks operate in villages, and for this reason the customers are almost exclusively peasants. The clients of the popular banks also comprise town dwellers. Their officials are paid while the staff of the Stefczyk banks give gratuitous service. The banking business of the popular banks is concentrated in the Union Bank of Co-operative Societies, of Poznan; while the Stefczyk banks are financed by the Central Bank of Agricultural Co-operative Societies. This bank is of a semi-official character, and concerns itself chiefly with the distribution of government credits.

The rate of interest charged is very high, the official rate of the Bank of Poland being about 10 per cent., while the interest charged by private institutions is from 2 to 4 per cent., monthly. As has been said, owing to the difficulty of selling their bonds the credit associations have confined their business to granting short term loans. This is one of the fundamental difficulties preventing the expansion of Polish agriculture, because long term credits are essential for the reconstruction of farms and estates ruined by the War.

CHAPTER VII.

AGRICULTURE IN THE BALTIC STATES, GERMANY AND HOLLAND.

AGRICULTURE IN ESTHONIA.

The Baltic States were formerly an integral part of the Russian Empire, but secured their independence as a result of the War. They consist of Esthonia, Latvia and Lithuania, and when once they have achieved economic stability, undoubtedly will prove a valuable source of food supplies and raw materials for the manufacturing countries of Europe. A brief description may be given of present agricultural conditions in these countries, especially to the extent that these have a bearing upon the sale of Canadian agricultural products in the British market.

Esthonia is situated on the eastern shore of the Baltic Sea and lies south of the Gulf of Finland. On the east is the Union of the Soviet Republics, while the south frontier is held in common with Latvia. The area of the country is about 18,500 square miles, being somewhat larger than Denmark, Holland or Belgium. On account of its climate and rich, though damp soil, it is suitable for field crop production and dairy farming. Rye, barley and oats are produced in quantities sufficient to make the country self-supporting with respect to these cereals, while potatoes, flax, meat, butter and eggs are exported. In addition to these agricultural resources, the situation of the country and its excellent ports make Esthonia the natural gateway of East European trade. In addition, the country has a highly educated population, skilled in agriculture, commerce and industry, and keen to take advantage of the opportunities created by new political and social organisation of national life. The population of the country amounts to 1,107,059, of which Esthonians constitute 87.7 per cent., Russians 8.2 per cent., Germans 1.3 per cent., Swedes 0.7 per cent., and Jews 0.3 per cent. It may be mentioned in passing that the language and culture of the national minorities is under the protection of liberal legislation, each minority being granted the right to establish a national organisation and to levy taxes for the benefit of its own schools and social institutions. Of the population, 27.4 per cent. live in the cities and towns, and 72.6 per cent. in rural districts. Nearly three-fifths of the entire population derive their living from agriculture, while 15.2 per cent. depend upon industry.

Esthonia has had an experience somewhat similar to that of other European nations with respect to the relation of the rural population to the soil. It was not until 1846 that the peasants were given the right to acquire land by purchase. This right proved barren to the majority of the farmers owing to the artificial obstacles that were put in their way, as well as by reason of their poverty. The land set aside for sale was in itself insufficient, so that the larger number of

peasants were compelled to serve the landowners as before. These conditions lasted until 1919. Before that year more of the land was occupied by large landowners, who held 2,428,087 ha., or 58 per cent. of the total area. There were 1,149 estates with an average size of 2,133 hectares. There were 1,640 small farms totalling 1,761,015 ha., or 42 per cent. of the total area of the country. The average size of these farms was 34.1 ha. Although the large estates occupied most of the farming territory, the greater part of them was cultivated by small farmers, on a rental basis. The large landowners maintained this system principally to procure cheap labour, as the rental contract generally obliged the tenant to perform a certain amount of unpaid for labour on the estate of the landowner. The economic effects of this system were bad, as the leased land was worked in a very primitive manner. The Land Reform Law of 1919 radically altered this system, under which the large estates were practically swept away. The buildings, workshops, agricultural stock, etc., located on these estates were also nationalised. In 1925 provision was made for compensating the former owners according to the real value of the land at the time of its nationalisation. The state is distributing the land among the farming community on the basis of a hereditary leasing system, although short term leases are also granted for small parcels of land utilised to supplement the workers' income. The land given to settlers formed 30,820 farms, totalling 519,060 hectares, these farms being held permanently. In addition, 7,086 farms were leased for limited periods. By the law of June 16, 1925, it was also permitted to farmers to purchase land.

The chief grains consist of rye, wheat, buckwheat, peas and beans, the most important grain crop being winter rye. It is now on the decrease, however, on account of the development of cattle breeding, which necessitates an increase of the production of forage crops. The crops grown for forage include barley, oats, mixed grain, hay, and to a smaller extent, root crops. The land under these crops amounts to about 60 per cent. of the total cultivated area, which shows the relative importance of stockraising in Esthonia. Of the hay produced, clover is the most important, comprising 84.1 per cent. of all meadow lands. This is generally sown with other grass seeds. Meadows are used generally for two years. Three year clover fields are used as pasture for cattle. Owing to bad weather conditions, the harvests of the last few years have been unsatisfactory, compelling the importation of grain from abroad. In 1922-1923-1924, Estonia imported large supplies of rye, wheat, and other grains, including smaller supplies of barley, oats, and mixed grain, for forage. Of the total amount of grain consumed in the country in the above three years, approximately 12.6 per cent. was imported.

The cultivation of potatoes and flax is of considerable economic importance. Potatoes are grown chiefly for use as raw material in the distilleries, which before the World War required 242,000 metric tons annually. Flax is a relatively important crop also, the seed being used chiefly for the production of linseed oil, varnish, and oil cake for feeding cattle. The flax fibre is mostly sold abroad, amounting in 1925 to 70,740 cwt. During recent years the distilleries have used

only a small percentage, about 6.1 per cent., of the potato crop. The balance was consumed in the manufacture of starch, 62.0 per cent. was used for cattle feeding, and 26.4 per cent. for seed. About 1.8 million cwt.s. are used annually for human consumption.

From a financial standpoint, the raising of livestock is a most important branch of Estonian farming. It made steady progress from 1920 to 1923, in which year it was seriously checked owing to the failure of crops. In 1926, Estonia held the following amounts of livestock:

Horses	226,300
Cattle	599,100
Sheep	666,900
Pigs	333,100

In 1926 Estonia had 28 per cent. more horses, 18 per cent. more cattle, 43 per cent. more cows, 23 per cent. more sheep, and 15 per cent. more pigs, than before the World War. Per 1,000 inhabitants, Estonia possesses more horses than Denmark, Holland or Sweden; of cattle, it possesses per 1,000, 545.4, as compared with 92.9 for Denmark, and of pigs 301.4, as compared with 332.4 for Denmark. While the absolute holdings are not great, it is significant that Estonia occupies, in comparison with the leading livestock countries of Europe, famed for their rational dairy farming and stock breeding, first place with regard to horses, second place with regard to cattle and pigs. The Estonian horses, which are of a small but extremely tough breed, find a ready home and nearby market, but a considerable amount of cattle is exported annually for slaughter, amounting to 10,000 head. In addition, beef and veal are marketed abroad.

Much attention is being paid to the improvement of breeds. In 1925, about 2,000 horses were registered in the pedigree books, and some 30,000 cattle. The societies for the improvement of cattle own about 300 thoroughbred bulls. In 1925, there were 154 societies concerned with rational methods of feeding livestock, and with methods for increasing the amount of dairy produce. The increase of milk is significant, not only in the dairy industry, but for the production of swine. In 1924, there was a total of 274 dairies to deal with this controlled milk, 180 being co-operative, and 94 private.

The dairy produce destined for export is under the control of the Dairy Produce Control Station, which in turn is under the direction of the Ministry of Agriculture. Export butter of the first quality is distinguished with the stamp: "Estonian Brand Butter." Second grade butter is exported without a brand, while butter of a lower grade is not permitted to be exported, the kegs being stamped: "Home market." Butter is prohibited from being exported if it contains more than 16 per cent. water, or preservative matter other than common salt, or harmful colouring matter, or if prepared from unsterilised cream. The butter exports have grown from 127.8 tons in 1921 to 6,494 tons in 1925.

The same strict regulations are applied to the export trade in meat and meat produce. Meat is permitted to be marketed abroad only

when approved as fit for human consumption, and when it is marked according to its quality. Bacon is marked with an oblong stamp, the upper part bearing the inscription "Eesti-Esthonia," the centre bearing the stamp of the slaughter house, and the lower part of the design, the words "Under Government Control." Sausages and other meat products are stamped with a seal, indicating the name of the maker, his trademark and address. The meat exported must be provided with an export label, signed by an authorised veterinary and sealed with his official seal. One side of this label is printed in Esthonian, the other in English, French or German, indicating the slaughter house where the animal was declared fit for human consumption and the export license.

The co-operative movement in Estonia celebrated, in 1927, its twenty-fifth anniversary. Although of comparatively recent origin, it occupies a position of great importance in the national economy. This co-operative movement includes consumers' societies, co-operative banks, dairies, societies for the use of agricultural machinery, potato societies and mutual insurance societies. Since 1914, the number of such enterprises has doubled. In 1917 the central purchasing organisation, The Central Co-operative Union, was established for consumers' societies. The Union imports many articles sold by the local co-operatives, including large quantities of agricultural machinery and fertilisers. It also sells abroad certain Estonian agricultural products, and owns several plants for the production of canned fish, wines, cider, and coffee substitutes.

Owing to the importance of dairy farming in Estonia, the farmers have combined to organise co-operative dairies on an extensive scale. The number of co-operative dairies has doubled since 1914, there being 316 in 1925. Of the total export of butter, in itself 22 per cent. of the total value of exports, 84 per cent. was produced in co-operative dairies. Thus, this movement in the dairy industry has grown not only with respect to the number of establishments, but also with respect to the value of the output. The average membership in the dairy industry is seventy, and the average number of cows is 295. The industry as a whole is under the control of the Central Society of Co-operative Dairies, which has a membership of 138 dairies. Its total sales in 1925 amounted to 23,272,600 gold francs. In 1925, 58.7 per cent. of the total exports of butter was handled by this society. In addition to its commercial activities it makes every effort to promote dairy farming. It employs a number of experts who give free advice and maintains a school for instruction in dairying. As a result of these efforts Estonian dairy produce, especially butter, is of a high quality, and it sells at excellent prices on foreign markets. As in general, the size of farms in Estonia parallels the Danish scheme of land holdings, the conditions for pig production are favourable. The small farmer gives personal and daily attention to his livestock, and is rapidly learning the proper methods of feeding and breeding to produce a bacon type. The Estonian farmers are highly intelligent, enterprising and aggressive.

With the further development of dairying, the swine industry must attain considerable proportions. There are two large slaughter houses in Estonia, the produce of which is consumed chiefly in the home market, with the exception of bacon which is exported. There are also two large, thirty-three middle-sized, and twenty-seven small sausage and preserved meat factories, exporting sausages and ham. There is also one middle-sized establishment producing margarine for the table and cooking. It may be added that there is also a league for the propagation of co-operative ideas and the actual development of the co-operative movement. It affords legal protection of the societies, instructs their personnel and controls their accounts. All co-operative organisations can be members of this league, which in 1926 had a membership of about 300 societies. It publishes its own monthly magazine, as well as a weekly paper devoted to the interests of the movement. Its staff consists of fifteen expert instructors in co-operative organisation. The league supervises a number of courses on co-operative methods each year, and also organises meetings in behalf of co-operation throughout the country.

AGRICULTURAL DEVELOPMENT IN LATVIA.

Latvia has an area of 24,400 square miles, and a population of 1,844,805. The racial texture is very homogeneous, consisting of 75.61 per cent. native Latvians, the balance being composed of Germans, Jews, Russians and Poles. By reason of its geographical location, it has favourable trade connections with Russia, Poland, Western Europe and the other Baltic States. It has excellent harbours at Riga, Libau and Windau; and its railway system, embracing 2,900 kilometres of trunk and branch lines, gives direct connections with Berlin, Kovno, Warsaw, Moscow and Reval.

Latvia, in common with some of the other countries visited, has passed, since the close of the War, through a profound social and agricultural revolution. The large estates have been split up, and the available land has passed largely into the possession of the peasant farmer. As a result the number of what would be reckoned as small holdings in Canada has increased considerably. The agricultural census of 1923 registers 193,741 separate holdings, as compared with 71,172 before the agrarian reforms. Of the total area of forest and farm land, amounting to 6,090,272 hectares, 1,677,465 hectares consisted of agricultural land, the balance being made up of meadows, pastures, forests and uncultivated or waste lands.

According to the data presented at the International Economic Conference, held at Geneva in May, 1927, the field husbandry of Latvia produced in 1925:

Cereals	Metric Quinlants
Wheat	589,000
Rye	3,151,000
Meslin	635,000
Barley	1,779,000
Oats	3,039,000

Forage and Food Crops:

Hay	16,664,000
Grasses and clover on arable land	9,090,000
Peas	395,000
Potatoes	7,505,000

Other Crops.

Flax	300,000
Linseed	279,000

Rye has always been the most important of the cereals cultivated in Latvia. In the eastern area it remains the outstanding crop, but the technique pursued is primitive. Slowly in the east, and more rapidly in the west, modern methods of cultivation are superseding those formerly employed. Oats and barley are important grain in the organisation of Latvian agriculture. Wheat, owing to the climatic conditions prevailing in the Baltic area, is a somewhat unimportant crop. Apart from rye, the pre-war standards of production have been reached, and in some cases exceeded. Potatoes form a very important part of the field production of the country. Approximately 75 per cent. of the total volume produced is consumed by the population, or is used in the feeding of livestock. About 5 per cent. of this crop is used for industrial purposes, chiefly in the spirit industry. Prices of this commodity are regulated by exports, spirit quotations, and the amount of feeding stuffs on hand. Exports go forward principally to Finland, Holland and Sweden.

Latvia exports considerable quantities of grains and livestock, but is also a heavy importer of certain agricultural products. Among the exports are found barley, oats, peas, vetches and clover. Imports consist of wheat, wheat flour, rye, rice and bran. Considerable foreign trade in field products is carried on with Lithuania, Germany, Holland and Denmark. A certain amount of wheat is imported from Canada, the Argentine and India.

Artificial fertilisers are widely used in Latvia, the practice becoming common about 1900. The principal manures imported consist of superphosphates, Thomas slag, Cali salt, Chile saltpetre, and Kainit. Local production of artificial fertilisers is limited to the manufacturing of bonemeal, in small factories in the provinces and in a few large factories at Riga. A considerable use is made, also, of agricultural machinery for field cultivation and the dairy industry. Germany has the bulk of this business, but the United States and Sweden export machinery in volume to the Baltic market, particularly to Latvia. Sweden and Denmark share between them the market for dairy supplies, and provide motors, separators, and complete dairy installations. Great Britain exports to this market special high-grade machinery, including threshing machines. Sweden, Denmark and Finland are at present concentrating their efforts on gaining a hold on the agricultural machinery market in the Baltic States, and to that end have followed the British example of granting liberal export credits to cover the purchase of machinery, seeds and pedigree cattle. As was the case before the war, a large number of primitive implements are used, which makes the proper cultivation of the land impossible.

Latvian agricultural leaders are working on the theory that since the country is to such a great extent a grazing one, attention must be centred on improving and expanding the livestock industry. What is now being done in this direction is a logically correct continuation of the methods applied by the great estate owners before the War. Both the university authorities, as well as government officials, are bending every effort to develop the agriculture of the nation along these lines, and are lending their support to specialist societies in working out this programme. In the few years that have elapsed since 1919, Latvia, in common with the other Baltic countries, has made considerable advances in the development of local cattle-breeding. Quite deliberately it has made Denmark its model. Its leaders in the sphere of agriculture are convinced that there is a strong economic analogy between the condition of Denmark in 1863 and Latvia today. Consequently, they are pushing, by every available means, the development of cattle breeding and the dairy industry. Efforts are being made to increase the number and quality of the horse population, for the proper cultivation of the soil. The estimated stock of horses in 1913, amounting to 297,645, was reduced during the War to 205,000; but the loss in numbers was far less important than the depreciation of the quality. In 1919 there was no systematic breeding of horses, which before the outbreak of hostilities was carried on in Livonia and Courland by the large landowners. At first, working animals were imported from Lithuania, because private interests were unable to finance the importation of breeding stock. The Department of Agriculture, therefore, undertook this important work, and imported breeding stock from Estonia, Denmark, Holland and elsewhere. Since 1922, individual farmers and associations have imported a number of splendid stallions. The breeds being developed are chiefly Belgian, Percheron, Shire, Oldenburg, Brabant and Norfolk, as far as private interests are concerned; but the state is attempting to reduce the number of breeds and concentrate hereafter on heavy British breeds, the Oldenburg, the Ardenne, and the South Russian steppe breeds. It is expected that for a considerable time to come the breeding of farm horses will be under the supervision and protection of the state.

In 1913, in the territory now known as Latvia, there were 940,319 head of cattle, but the holdings were reduced to 691,232 by 1919, making a recovery to 810,500 by the end of 1923. Again, the reduction of numbers was not as serious as the reduction in quality. The largest, best bred and most economically kept herds are to be found in the northern Livonian province; although the cattle are not less numerous, they are the poorest in every respect in the backward province of Latgallia. The war seriously affected the specialist societies: of 344 cattle-breeding control societies, of which fifty represented the large farmers, only two societies survived. Considering the difficulties with which Latvian farmers were confronted, remarkable progress has been made, 405 local cattle-breeding control societies having been established by the end of 1924. In 1914, fully 54 per cent. of the entire cattle stocks were pure or cross-bred, consisting of Finnish, East Friesian and Dutch breeds. The present breeds, in regard to which no reliable statistical data are available, leave much

to be desired. Nevertheless, for the improvement of both beef and dairy cattle numerous importations of bulls have been made, notably of brown Fuenians from Denmark, and black and white East Friesians from Prussia.

Sheep rearing is an important aspect of Latvian agriculture. The peasant farms are relatively heavily stocked with sheep, which provide the rural community with meat and wool. At the end of 1924, there were 1,235,000 sheep in the country, considerably more than before the War. Little assistance has been given to this development by the state or the co-operative societies, the increase resulting from sheer economic necessity. The Germans, during the three years they occupied the country, introduced the Merino breed; an attempt is now being made to add Oxfordshires and Shropshires. Model flocks and breeding stations are now, also, being established throughout the country by the Latvian Agricultural Central Society.

Before the War scientific pig breeding was almost entirely neglected. The Baltic Society of Farmers, at Wolmar, was the first to pay attention to the problem, and to introduce breeding stock. Some of the estate owners followed this example, and the result was a considerable infusion of Landrace and Yorkshire blood. The pre-war holdings of pigs were not large, and were used principally to meet the requirements of the rural population and of the market towns. Bacon and lard were not exported; at most the better-class sausage works of Riga, Mitau, Tuckum and other centres delivered certain manufactured products to Petrograd and Moscow.

The pig holdings of Latvia amounted to approximately 570,000 before the War. During the period of hostilities there were heavy losses, and it was not until 1922 that progress in pig production went forward at a rapid rate. An effort is now being made to improve the quality as well as to increase the quantity, of the annual production. Although quite a number of German pure-breds have been imported, an effort is now being made to secure Yorkshire stock, to adapt the supply to the English requirements. Breeding centres have been located at certain strategic points throughout the country, but to carry out Latvia's ambitious programme of pig production heavy expenditures must be made, and the country is scarcely in a sufficiently strong economic condition, at the present time, to undertake them. Besides, the problems of feeding and proper housing are still to be attacked on the smaller farms. In 1923, the Central Union, the leading agricultural association, acquired the Riga slaughter house, in order to prepare it, through alterations and additions, for the exportation of bacon. On inspection, it proved to be inferior to the smaller Danish plants. Libau also has slaughtering facilities for the export market; but the plants at the other towns cater only to the local market. Well equipped cold storage facilities exist at the three ports, and together with the Libau slaughter house were taken over from Russian times. The export trade in meats at present is not undergoing any rapid development, attention being paid to quality, rather than quantity, with a view to securing a favourable reputation in the English market. Latvian experts consider that the present pig holdings of about 500,000 may be regarded

as the economic basis of swine husbandry; and that to attempt to increase the quantity, before reaching a high standard of quality, would involve merely irrational overproduction. By 1924 England was taking about 83 per cent. of Latvia's meat exports, Germany 13 per cent., while smaller quantities were going forward to France, Holland, and other countries. The principal items in the meat trade are: bacon, ham, lard, pork, beef, tongue, sausages, and various byproducts. There are considerable exports of casings, horse and cow hair and pigs' bristles, as well as of raw and cured hides, skins, etc.

DAIRY FARMING IN LATVIA.

Brief reference may be made to the development of dairy farming in Latvia, because of its bearing upon profitable and scientific swine production. This industry, although the Baltic States comprise primarily grazing lands, experienced a comparatively late development, as compared with Denmark, Holland, North Germany and other dairying area. It was not until the years 1911-1914 that Latvia played an important part in the export of butter. By 1914, a number of co-operative dairies had been launched, and a considerable development of dairy farming had taken place, notably on the large estates. A considerable number of dairies were to be found in the provinces of Livonia and Courland, where the farmers may be regarded as the pioneers of this industry in the Baltic States.

In 1919, Latvia had only fifteen dairies, so greatly had the industry suffered as a result of the War. Reconstruction was at first rendered difficult by the Government's economic policy, which did not recognise the importance of the dairy industry. In other respects the industry was under pressure, as grains and feedstuffs were high in price, and the entire economic life of the country was in the hands of speculators and profiteers. A favourable change occurred in 1921-1922, when grain and fodder prices dropped, and the price of butter and other dairy products rose. The farmers quickly learned that it was more advantageous for them to process their grains and feeds, and to market their products as far as possible in the finished form, as butter, cheese, bacon, etc. As a consequence there was a remarkable development of co-operative and private dairies, which by the end of 1925 stood at 548 establishments. Nevertheless, the greater number are still small and technically primitive. The next step must be the improvement of the business organisation and technical equipment of the plants. The population consumes about 25 per cent. of the milk output, in the raw and manufactured state, leaving a balance of 75 per cent. to be turned into finished products for export. The country has upwards of 580,000 milch cows on farms; and it must be evident, therefore, that the milk supply is important, not only for the dairy industry, but for the scientific feeding of pigs. In recent times, the exportation of butter was not seriously attacked until 1921; and even then exports moved within very narrow bounds. At first, naturally enough, butter shipments from Latvia were received skeptically by European importers. The packing and grading of the first consignments did not satisfy the requirements of London, Brussels and Rotterdam; but after a careful study of

export requirements, measures were introduced to improve these conditions. Following the example of Denmark, Holland, Sweden, Finland and Estonia, an export control for butter was instituted to satisfy the exigent demands of the chief European butter markets, and more particularly of the London market.

On the whole, the measures of control so far taken have not proved satisfactory. Official and co-operative interests are striving to improve standards; in this case, also, as in pig production, to replace quantity production with quality output. Technique, theory and practice are emphasised; but permanent progress waits upon the securing of trained men for the management of the dairies. It should be added that the extraordinary development of co-operative and private dairies has made the problem of quality production a very difficult one. It is firmly believed in Latvia, however, that the strict export control regulations, along with the dearly bought experience of the new dairies, will rapidly improve production standards in the industry. It may be added that Latvia is following the precedent of Denmark in exporting her dairy products of quality, and replacing them in the domestic market with importations of lard, margarine, vegetable fats, and so forth. It is a well known fact that in the classical butter country, Denmark, the fine products of the dairy industry are exported, their place in home consumption being taken by cheaper imported butter and butter substitutes.

AGRICULTURAL UNIONS AND CO-OPERATIVE SOCIETIES.

Limits of space do not permit of an extensive treatment of the development of the co-operative movement, and the formation of general agricultural societies, in Latvia. It must suffice to say that these have been the outcome of a long historical movement, extending over generations of endeavour and sacrifice. The first important organisations were the Libau Co-operative Society of Farmers, and the Society for Self-help. These were the prototypes of all subsequent agricultural societies established in Russia, and latterly of co-operative societies. Considerable credit for the promotion of agricultural interests is due, also, to the Baltic Society of Farmers, at Wolmar. The beginnings of the present organisation of the farmers of the Baltic States date from the latter part of the last century. At first, only preliminary work was undertaken, but beginning with 1903, the movement developed rapidly. It seemed as if a national agricultural and cultural flood had broken down a dam, and was spreading in a raging torrent over the entire country. Local agricultural societies were first combined in a national union by the formation of the Agricultural Central Union in 1907. The Union encouraged the founding of local agricultural societies for the promotion of scientific agriculture; but other locals were established which joined to economic interests cultural activities. The leading society, the Agricultural Union (Konsums), with its special departments and many branches, is interested chiefly in the commercial aspects of farming.

In 1909, the first co-operative dairy was launched by peasant farmers, and the first union of co-operative dairies in 1912. There

followed quickly unions of farmers for the co-operative handling of different articles, including agricultural machinery. There were nearly 275 co-operative credit societies by 1913, and a little over 200 technical agricultural organisations. The War practically ruined this great work, but since the close of hostilities the organisation of the farming industry has made considerable progress. There are now healthy consumers' co-operatives, credit societies, dairy, livestock, machinery, insurance, and other co-operative organisations, as well as eleven central unions of farmers. In a word, the Latvian farmers have rejected a policy of state support and supervision, and place their reliance for economic rehabilitation upon individual initiative and co-operation.

AGRICULTURE IN LITHUANIA.

The frontiers of Lithuania have not as yet been definitely determined, but the area at present administered by the Government comprises 56,257 square km., with a population of 2,200,000. The districts in dispute, Vilna and Grodno, contain the most important industries, and the railways there are organically related to the transportation system as a whole.

Lithuania suffered especially heavy losses during the War. The biggest actions on the Russo-German front occurred in its territory. It is calculated that, not counting destroyed and damaged fields and an entire series of losses of a purely military character, the damage sustained by the people of this country amounted to not less than \$600,000,000. Many of the best equipped farms, and a large number of industrial establishments, were completely ruined. In addition, tens of thousands of farmers were compelled to abandon their homes. Not less than 3 per cent. of the forest reserves was wiped out. At the end of 1919, one-third of the cultivated land on the large estates had gone fallow, and large numbers of farm animals had disappeared. Even on the peasant holdings, 12 per cent. of the cultivated area had gone fallow. On the small and medium-sized farms, horses had decreased by 13 per cent., cows by 22 per cent., pigs by 8 per cent., and sheep by 15 per cent. On the large estates, where alone modern agriculture was practised, the losses of livestock were overwhelming, ranging from 57 per cent. for horses to 52 per cent. for sheep. Even the instruments of agricultural production were, in large part, carried away by the evacuating forces. Only in 1920, when the country as a whole was liberated from the invader, was it possible seriously to attack the problems of economic reconstruction. Even then other difficulties intervened, particularly with respect to Poland and Russia. It was not until 1924, for example, that Lithuania's one natural sea outlet, Memel, was finally recognised as belonging to the country.

Lithuania, because of its geological formation, is divided into two natural economic areas. In the north the conditions are favourable for the cultivation of wheat, barley and other cereals; in the south, the soil is suitable for the production of the hardier grains and root crops. With respect to the classification of the lands of unoccupied Lithuania, the following computation has been made:

Arable land	46%
Meadows (natural and artificial).....	14%
Pasture land	12%
Market gardens	3%
Forests	17%
Bogs and waste land	8%
	100%

Precipitation is heavy, amounting to 600 mm. per annum. Therefore, the natural conditions make Lituania a stock raising, rather than a grain producing country. According to the figures presented to the International Economic Conference at Geneva, the field products of the country, in 1925, were as follows:

Agricultural Products	Metric quintals
Wheat	1,438,000
Rye	6,634,000
Barley	2,450,000
Oats	2,846,000
Meslin	593,000

Forage and Food Crops:	
Clover and other fodder crops	14,722,000
Peas and beans	1,168,000
Potatoes	15,811,000

Other Crops:	
Linseed and hempseed	421,000
Flax and hemp	414,000

Meadows and Pastures:	Hectares
Area	1,415,000

Forestry:	
Area	884,000

Lumber and Wool—Figures not available.

This represents a considerable decline from the average of the period 1909-1913. Rye is the most important grain produced, there being a considerable annual surplus for export. Wheat is required for the home market, which absorbs the entire production, and demands additional supplies yearly. A small amount of barley is exported, chiefly to Germany; the surplus of about 25,000 metric tons of oats goes to Great Britain. Potatoes are distributed chiefly in the home market. Flax, as in Latvia, is an important crop; about 20,000 metric tons of fibre, and an approximate amount of seed, are exported.

The great defect of Lithuanian agriculture is its primitive character. It suffers more than the other Baltic States from lack of organisation and scientific development. The Government is aware of these deficiencies and has prepared a comprehensive programme for their elimination. It has introduced far-reaching measures of land reform, these being designed to satisfy the land hunger of the peasants. Provision has been made to provide land for the landless, and to increase the acreage of the very small, economically inefficient holdings. Other aims of the reforms are to create conditions favourable to the development of small and medium sized farms, and to place under state control those national resources which, in private hands, tend to be wasted. The

estates entailed during the Russian régime and the lands granted under privileged conditions have been appropriated, as well as the agricultural areas formerly held by the Peasants' Land Bank and the Nobles' Bank. The great estate owners are to be left with a maximum holding of 200 acres. The lands are alienated with all immovables, with the exception of industrial and commercial establishments. The greater part of the appropriated lands were taken over without indemnity, but for the remainder the state has agreed to pay the pre-war price. The larger and more neglected estates are first being dealt with, while the properties not exceeding 375 acres will be appropriated at a later date. It is intended to divide the appropriated lands into farms of from 20 to 50 acres. A certain amount of the alienated land is being utilised for urban requirements—for the extension of industrial areas, for parks, gardens for working men, agricultural schools, charitable institutions, etc. The new owners are required to pay the state an annual rental computed in rye, or its market value. Families of men who have fallen in defence of their country, wounded soldiers, and certain volunteers receive free grants. Moreover, all the military recipients have been granted a certain amount of grain and timber for building purposes, for ten years, free of interest. It is estimated that the agrarian reforms will affect about 3,000 landlords, and an area of approximately 2,500,000 acres, of which 1,500,000 consists of cultivable land. It is expected that ultimately about 30,000 new farms will be created under this policy of agrarian reform. In addition, the Government has undertaken the establishment of a bank to provide short-term loans to peasant farmers, and a mortgage bank to furnish long-time advances. Moreover, special agricultural schools are being opened up; lectures delivered on field and animal husbandry; conferences of farmers being organised, and experimental fields established. Pure seed is being distributed to peasant proprietors, and they are being assisted in securing necessary supplies of machinery and farm implements, as well as artificial fertilisers.

The large estates had not been managed with a view to developing their possibilities as farms, a large part of their income being secured from the cutting of timber. More than a third of the peasants had too little land to permit them to make a living, and 17 per cent. of the agricultural labourers living in villages, had no land at all. The large estates suffered most damage during the war, large areas going fallow. These were the areas divided among peasant proprietors, the model estates remaining unassigned. The state hopes finally to create an economically strong class of middle-size farmers, occupying land ranging from 10 to 16 hectares. It is not expected that grain production will increase in the near future; but everything possible, under present circumstances, is being done to augment the holdings of livestock. The number of animals, including horses, cows, sheep and pigs, has increased considerably in recent years. In the post-war period of reconstruction, much was accomplished, as may be seen by comparing the figures for 1913 and 1924:

	1913	1924
Horses	495,000	482,000
Cows	978,000	1,252,000
Sheep	720,000	1,399,000
Pigs	1,350,000	1,564,000

On the whole, then, it may be said that agriculture in Lithuania, in which at least 80 per cent. of the population find a living, has made considerable progress since the termination of hostilities. It must be recalled in this connection that it was not until 1923 that the peasants could begin to secure supplies of the most essential articles requisite for production, including artificial fertilisers, vital for the cultivation of the soil. During these years, also, livestock breeding proceeded in a wholly haphazard manner, because the farmers' societies could not command essential credits. Only in 1923 were credits obtained in Sweden, and the Government enabled thereby to furnish financial support for the systematic development of the agricultural resources of the nation.

The development of the packing industry falls below the standards attained in Estonia and Latvia. Kaunas (Kovno) secured cold storage facilities in 1923; and a small packing plant at that centre has been recently restored. The Lithuanian Co-operative Society has a slaughtering establishment at Panevezys, where preserved meats and sausages are also prepared. In addition, there are twenty-five municipal slaughter-houses in the country.

CO-OPERATION IN LITHUANIA.

The first co-operative organisation was a society of consumers, founded in Vilna in 1869. Progress, however, was slow until the Russian authorities adopted a more liberal attitude toward the movement in 1904. In 1908, a society was launched in Vilna to carry on propaganda in behalf of the co-operative programme, and to afford support and direction to the local societies. There was a considerable development as a result, there being 200 consumers' co-operatives, 112 credit, and 80 agricultural societies at the outbreak of the Great War. The Russian authorities had refused permission to the societies to establish a central union, so that their activities were necessarily circumscribed. With the outbreak of war, a regional league was established; it was compelled, however, to suspend operations early in the course of the struggle. The war destroyed the entire property of these co-operatives. Some sixty societies carried on, but they were forced to limit their activities within the bounds mapped out by the German military authorities.

With the establishment of the Lithuanian Republic in 1918, the co-operative movement took on new vitality. In 1919, a special bureau was formed in the Ministry of Commerce and Industry, to support co-operative organisations of every type suited to the needs of the nation. Legislation was enacted designed greatly to facilitate and simplify the conditions under which societies might be organised. The Government, although supporting the movement by every means in its power, was unable to give any financial assistance. The leaders of the movement therefore appealed for financial assistance to all classes of the community, and met with generous support. At the beginning, owing to the resentment felt against war profiteers, consumer societies found most favour. Others, however, were rapidly formed, until now, in addition.

there are producers' co-operatives, building societies, agricultural organisations, and rural credit banks, including about forty of the Raiffeisen model in the Memel territory.

With increase in numbers, the various types naturally desired to form central organisations, but owing to the unsettled economic and political conditions only regional groupings were attempted. In March, 1920, there assembled in Kovno the first congress of the co-operative societies of Lithuania. The most important of its resolutions were: First, the establishment for the whole country of a single Co-operative Union; and second, the establishment of a Co-operative Bank. Only one regional group remained outside of the union, although it continues to purchase its commodities through the central organisation. It should be added, that this congress represented chiefly the consumer societies. A few isolated societies at distant points also remained outside of the union. These co-operatives are composed mainly of peasants, and therefore deal in farm machinery, mineral fertilisers, and commodities in general required for production as well as consumption on the farm. Besides supplying member organisations with necessary commodities, the central office gives instruction in co-operative methods, carries on propaganda, audits the books of the locals, and publishes a weekly co-operative review.

Producers' co-operatives, among the farmers, have made splendid headway, considering the many obstacles that had to be overcome. Until the end of 1922, the skyrocketing prices for farm commodities, due to the depreciation of the currency, hindered the co-operative movement, the peasants being caught up on the crest of a wave of fictitious prosperity. With money stabilisation, however, and the ensuing collapse of prices, hard conditions forced the farmers to combine their economic activities for their common good. The Agricultural Society of Lithuania began business in 1921, and by 1923 had twenty-three auxiliary branches. Among other interests, it has held several exhibitions of farm products, both field crops and livestock. In 1923, another important producers' society was organised, having for its chief aims the co-operative marketing of farm produce, as well as the improving of soil culture and animal husbandry. It exports principally grain, flax and eggs. In addition it deals in the wholesale purchase of fertilisers and other essential supplies. In 1923, also, the League of Agricultural Societies was formed at Kovno, covering the farmers' interests on the same lines for the whole of Lithuania. It receives subsidies from the Government to aid in carrying forward its work of improving conditions of farm life and work. It carries on field crop experiments; encourages improved livestock breeding; establishes pure seed societies; and encourages the formation of local co-operative dairies. With the support and guarantee of the Government it arranged a credit of 1,000,000 crowns from the Swedish Government, for the purchase of agricultural machinery and purebred cattle.

CO-OPERATIVE CREDIT.

The hard war experience with respect to the solvency of savings and other banks made it particularly difficult to regain the confidence

of the rural community with respect to the value of new credit institutions. The various currencies in circulation during the war period had become totally worthless; and even for two or three years after the close of hostilities the currency situation went from bad to worse. It was not until the new national money had been put in circulation, and then only gradually, that confidence in the villages and rural districts in any kind of money or banking institution was restored. Moreover, the masses, as well as the classes, had seen their life's savings evaporate with the general collapse of credit. However, rural credit societies were finally launched, and by the end of 1924, 287 were in operation. The demands for loans far exceeded the available money supply. These credit organisations are grouped into three chief divisions, with a central bank at the head of each. The Co-operative Bank of Lithuania takes care of the banking business of local credit societies, consumers' societies, agricultural societies, teachers' unions, municipalities, and so forth. The Central Bank of the League of Cultivators takes care of the local banking interests of this agricultural group. The local banks are the so-called national banks, but are merely rural credit organisations for the acceptance of deposits and the granting of short-term loans. The Central Bank conducts banking business, also, for a large number of consumers' locals. It also deals in salt, fertilisers, and other commodities in a rather large way. The Jewish Central Bank is concerned with financing the Jewish artisans and traders who were ruined by the war. It has accomplished much in that direction, but a great deal remains to be done, for no other class in Lithuania suffered so cruelly during the period of hostilities.

It may be said in concluding this summary that the second Co-operative Congress, meeting in 1922, took steps to found a Co-operative Council to take care of the common interests of all co-operative organisations, both the legal aspects of their activities as well as the scope of their work. According to the most recent available data, membership in Lithuanian co-operatives consists of 67.5 per cent. farmers, 15.5 per cent. labourers, and 17 per cent. artisans and other employees.

THE GERMAN PORK INDUSTRY.

Through arrangements made by Mr. W. A. Wilson, the German Embassy at London kindly offered to put all facilities at the disposal of the Commission necessary to secure the facts bearing upon the German pork industry. Unfortunately lack of time precluded the making of as thorough an examination of the industry as its importance warranted. It was possible merely to discuss production and marketing problems with several outstanding members of the trade, and to make a brief inspection of methods of plant operation.

Upon arrival at Hamburg an appointment was made with Mr. L. D. Wilgress, Canadian trade commissioner for Germany, who furnished valuable data upon matters pertaining to the investigation, and who also kindly arranged interviews with men connected with the German bacon and pork trade. Mr. Siems, one of the executive officers of Messrs. J. J. Witt, Auf Dem Sande 1, who has a thorough knowledge

of the packing house industry, his firm being importers of packing house products, gave some interesting information bearing on the bacon industry in Germany. Mr. Siems, who has made a careful study of the possibilities of bacon production in Germany, stated that the farmers had made great strides recently in the production of quality bacon, and were determined to secure a share of the British trade. He pointed out that in Oldenburg, Westphalia and Hanover, the farmers, with the support of the organised trade, were gradually building up a splendid connection with England. Mr. Siems was of the opinion that despite rumours which have been circulated concerning the formation of a great German bacon trust, the matter had been exaggerated. While it was true that a considerable plant was under construction near Berlin, he believed that the available supplies of hogs in that vicinity did not warrant the construction of a large scale plant. It may be added that English and German bankers appear to be behind this scheme, but it is not so comprehensive as has been supposed. In fact, the capital of the plant is only some 40,000 marks, and part of this is being supplied by a Danish firm in the form of packing house machinery. A bacon factory in Oldenburg, which was inspected, is making shipments to England, but it does not appear that the business is yielding a profit. This concern, the Boelts A. G. Oldenburg Packing Plant, is financed by private capital, but is operated on a plan similar to the Danish model. Pigs are graded as in Denmark, but farmers are paid in full upon delivery. The factory has a ready sale for all edible offal in the surrounding country. It is interesting to note that the pigs are weighed alive in order that comparisons may be made with the killing percentage. The bacon is shipped to Messrs. Henry A. Lane & Company, Limited, London. This British firm acts as their exclusive agents, and the claim was made that this German product was receiving top prices in the London market.

The North German States are favourably located with respect to ability to compete with Denmark and Holland in the British bacon trade, and geographically have an advantage over the Baltic States, Poland and Russia. So far as was possible to ascertain, production costs are higher than in Canada. The Hanoverian and Westphalian bacon hogs resemble the Landrace, and compare favourably with both the Landrace and the Yorkshire types. Some very fine hogs were inspected near Speyer. With German thoroughness, production and feeding are carefully organised to reduce costs to a minimum. The farmers arrange the breeding of the sows so that farrowing takes place throughout the year, and not merely in the spring and autumn months. While there is no national scheme for pig testing in Germany, nevertheless pig recording has been commenced in two provinces, namely, East Prussia and Hanover. This scheme was introduced in 1924, and while the results achieved so far cannot be regarded as conclusive, nevertheless the farmers now have at their disposal records bearing on pedigree and performance. A real attempt is being made to combine the information obtained by recording societies with that secured at type testing stations, and the extension of the plan will no doubt prove of great benefit to German producers.

As early as 1860 the importance of quality in pig production was recognised by the German trade. At that time the lighter weight Danish hogs which reached Hamburg were slaughtered at that point, and the bacon exported to England. Indeed, as has been noted elsewhere, the higher prices which the Hamburg buyers paid for the best type of Danish pigs proved to be one of the important factors in inducing Danish farmers to study the possibilities of this type of pig.

The grading of live pigs has received careful attention on the German markets. As observed elsewhere, the grading of live pigs must be largely a matter of visual appraisal, and can take into account only such factors as weight, conformation and appearance. These give no absolute indication of internal quality. At the same time, the commercial advantages of applying a uniform grading system for live pigs are recognised, and have received due consideration in Germany, as well as in the United States and Canada. In Germany, live pigs are classified as follows: fat pigs, full-fleshed pigs and fleshy pigs, or so-called roasters. These are further subdivided into the following weight grades: fat pigs, over 300 lbs. live weight; full fleshed pigs, divided into three groups, 240 to 300 lbs., 200 to 240 lbs. and 160 to 200 lbs.; fleshy pigs, including pigs between 120 and 160 lbs. and pigs less than 120 lbs., sows. The above grades are controlling factors on most of the large German markets, and form the basis of price quotations. These standards were given statutory support by the Government in August, 1925. Up to the present, the adoption of the official grades is voluntary on the part of the federal states, but these have all adopted the system, which is now almost universally applied throughout Germany.

Germany has achieved remarkable success in different directions, in the field of co-operation. These co-operative activities have ranged from credit societies to supply houses of every description. Warehouses, under the control and management of co-operatives, are to be found in many small towns and even villages, as well as in the greater cities. According to the latest figures available (April 1, 1927), the following co-operatives were officially enumerated:

- 107 Central Co-operative Societies;
- 20,734 Savings, Loan and Credit Societies,
- 4,617 Co-operative Selling and Distributing Societies,
- 3,940 Co-operative Dairies,
- 10,620 other Co-operative Societies.

According to the most recent figures available (January 1, 1924), there were 321 livestock co-operatives in Germany. In most sections of the country there is a central co-operative, which controls the selling of livestock on the big markets. The co-operative sale of livestock is of special significance in Pomerania, Hanover and Bavaria. It should be noticed that the number of these societies does not in itself give an adequate idea of the importance of co-operative livestock marketing in the different geographical areas of the country, because, in some instances, a single co-operative—as, for example, in Pomerania—may extend its activities over a whole Kreis (county), while in other areas

there are many locals connected with the central organisation, as in Hanover. These societies, in general, operate on a compulsory basis; or, perhaps better stated, on a contract basis. The contract is considered indispensable, for otherwise the farmer is inclined to deliver low grade products to the co-operative, while quality animals are sold on the open market. Nevertheless, human nature being as it is, the farmer has insisted on obtaining the same price for the poor quality animals delivered to the co-operative, as obtained for the better grade stock sold elsewhere. For this and other reasons, it became clear from study of the contract problem in Germany that farmers are moving in the direction of demanding a contract basis in their livestock marketing organisations, as well as in grain marketing associations. Briefly stated, the claim is advanced that the success of the marketing association rests upon the contract and the contractual obligation, supported by a federation of all local associations into one provincial central selling agency.

Limits of space will not permit of the making of more than a reference to the credit situation in Germany. It must suffice to say that before the War, Germany had in operation one of the most valuable rural credit schemes in the world, modified to meet local and provincial requirements. In the post-war period German agriculture suffered much more than German industry from the lack of essential credit, interest rates reaching prohibitive figures. As is well known, the various state governments are giving careful attention to the rehabilitation of agriculture, and are devising ways and means for furnishing the farmers with essential supplies of working capital. Doubtless, in due time, new life will be infused into the Raiffeisen banking system. This system, it need scarcely be said, is a special application of the Schulze-Delitzsch banking principles applied to the rural community, with such variations as are demanded by the rural environment. It may be well to recall that the model rules of the Raiffeisen societies state that: "The object of the society is to improve the situation of its members, both materially and morally, to take the necessary steps for the same, to obtain through the common guarantee the necessary capital for granting loans to members for the development of their business and their household, and to bring idle capital into productive use, for which purpose a savings bank will be attached to the society."

It will thus be seen that Raiffeisen always kept the factor of character prominently before the members of the association. In all his propaganda he made the widest possible use of the parish priest or pastor, and with their help developed a new community life around the village bank. It may be permissible to express the opinion that the organised farmers in Western Canada should take due note of that fact, because through the co-operation of the Church, German farmers were able to harness the mighty force of fraternity and, through co-operation, give it practical effect in their economic life.

The subscribed capital of these banks is practically nil; the universal unlimited liability of the associating members forms the basis of credit. Under the law of 1889 every co-operative society was compelled to have shares, but the Raiffeisen societies complied with this by issuing merely nominal shares, on which no dividends are declared.

Raiffeisen wished to create credit for small agriculturists out of the immaterial assets of character and of mutual knowledge, backed by the material assets of land, livestock, implements, etc. He therefore limited the size of each society to a single village, although there are larger areas in the case of the town banks, where the nature of the business and methods of control vary. It may be added that all profits remain the collective property of the society, to be used for the mutual benefit of the farmer members. The profits are divided into two classes of reserve funds: first, the reserve fund proper; and second, the foundation fund. The first reserve fund is regulated in the ordinary way, but the second really corresponds to a shareholders' dividend. Money, therefore, placed in the foundation fund can be used for new enterprises, such as the extension of the premises of the bank, or some community undertaking. The loan capital is made up of small savings and deposits, and is secured from members, and non-members outside the district. In addition the bank obtains credit from a central bank, with which it has a current account. The funds so raised are used to provide ordinary loans, to take care of current accounts, or property transfers. While these banks have been an instrument of the highest value in energising the rural community in Germany, their transactions are conducted on so small a scale that they would have little practical importance in meeting the economic needs of Canadian producers. This brief reference has been made to the Raiffeisen system, not because of its actual value to Western farmers, but to draw attention sharply to the need of giving further study to providing the agricultural community with adequate working capital on a sound and equitable basis. In all the European countries visited it is noteworthy that the question of rural credits was receiving careful study. This was due, perhaps, above all else, to the fact that the collapse of European currencies had provoked a credit crisis, the effects of which were most seriously felt in the agricultural industries.

THE BACON INDUSTRY OF HOLLAND.

Unfortunately, as was the case with Germany, the Commission had not sufficient time to make a thorough study of the Dutch bacon and fresh pork industries. Nevertheless, sufficient data were secured to drive home the fact that Holland is a great and growing centre for pig products, that country producing large quantities of bacon and pork for export, as well as for home consumption. The Dutch pig industry has made remarkable progress during the past fifty years, this development being based upon a similar development of dairy farming. Holland makes wide use of imported feeding stuffs, chiefly maize and oil cake. The number of pigs in 1880 was estimated at 834,820, but by 1910 the pig population had increased to 1,259,844. Production fell off during the war years, but the recovery has been rapid. In 1921, the pig population was estimated at 1,519,100, which represented an increase of about one hundred per cent. as compared with the figures for 1880. Before the imposition of the embargo, the type of pig forwarded to the British fresh pork market was remarkable for its uniformity, appearance and its general high quality. The improvement

of the Dutch pig industry has been brought about largely by the importation of English Large Whites. As stated in detail elsewhere, the embargo against the importation of fresh pork has resulted in a great expansion of the Dutch bacon industry, with resultant serious effects to the Danish and Canadian bacon trade.

During the brief visit of members of the Commission to Holland, particular attention was given to the co-operative movement in the dairy industry, since that industry in Holland, as in Denmark, is the foundation upon which pig production has been built. It was observed, however, that the Dutch dyke farmers had carried co-operation into many



*T. J. MANSHOLT,
Director of Agriculture for Holland.*

aspects of agriculture, particularly with respect to the selling of vegetables, bulbs, and flowers, and the like. Mr. T. J. Mansholt, Director of Agriculture in the Dutch Ministry of Agriculture, accompanied the members of the Commission in person, and it was owing to his guidance that a clear understanding of the various uses to which co-operative methods are applied to Dutch farming, was secured.

The Netherlands Herd Book Association at The Hague plays an important part in the dairy industry of the country. Here very careful records of pedigrees and performances are kept, and an office staff is permanently employed on the work. It was interesting to notice the great care given to detail in this work, and the scientific methods applied. The Dutch dairy industry occupies a place of eminence in Europe because of the application of science and the employment of

experts in the business. At Rotterdam an opportunity was given to inspect the de Vanns, Ltd., Dairy Farm, which may be regarded as a model of efficiency. This is an exceptionally well-managed dairy farm, having one hundred and sixty purebred Holstein-Friesian cows. This herd presented a wonderful picture of dairy stock in black and white. A point of interest to Canadian observers was found in the fact that this dairy is largely supported by the medical and dental professions on a philanthropic basis, to provide pure milk for invalids and children. The milk is tested daily, and the cows once every six months for tubercular disease. Bulls from this herd are exported to all parts of the world, and at the time of inspection there was a very promising lot of calves in the stables. The large barn, holding the herd of calves,



*Punting out his load from a co-operative auction
at Poeldijk, Holland.*

is kept spotlessly clean. Inserted in the glazed tile walls behind the cows are wash bowls for the milkers, and every effort is made to enforce sanitary provisions. This was an outstanding dairy farm, and afforded a splendid example of what may be accomplished in producing a quality product with production costs under strict business control.

The co-operative auctions at Poeldijk, near The Hague, were also visited. Fifteen of these auctions operate in the district between The Hague and Rotterdam. At Poeldijk the two hundred and sixty members of the co-operative auction sell all their produce through the association. They handle all garden and glass house produce, consisting of tomatoes, grapes and peaches, cauliflower, radishes, etc. Most of these products are shipped to Germany. While not bearing specifically upon the

objects of this investigation, these auctions were briefly inspected because they illustrated certain aspects of the co-operative movement of value to Canadian producers. The auctions are legally organised and incorporated by the Department of Justice. The Association at Poeldik retains 4 per cent. of the price realised to cover costs of operation, and the upkeep of the sale room. The producer is paid once a week through the co-operative board, the president of which is elected every three years. The membership fee is one guilder. It appears that the fifteen auction warehouses have a total annual output of the value of 23,000,000 guilders.

It was observed in passing throughout the country that Holland well deserves its reputation for the production of bulbs, flowers and vegetable products. The important fact noted, however, was the extent to which co-operative marketing had been carried in that country. This type of marketing has made considerable headway, and has been adapted to a wide variety of purposes. The Dutch farmers also organise some of their purchasing, such as the buying of fertilisers, on a co-operative basis. A large business has been developed in this way, but the Dutch farmers have not organised co-operative factories such as obtain in Denmark.

CHAPTER VIII.

SOME ASPECTS OF RUSSIAN AGRICULTURE.

THE RUSSIAN AGRICULTURAL SITUATION.

Russian agriculture, along with that of the Baltic States, suffered great losses during the World War. Owing to the prolonged fighting, the demoralisation of industry and transportation, the dearth of capital, and unsettled political relations with the western nations, Russian agriculture has been placed under heavy handicaps in recovering its former position. The breaking up of many of the former large estates has curtailed production in certain directions, particularly in the output of wheat and other cereals. Nevertheless, personal observation showed that the authorities were working indefatigably to restore agriculture within the confines of the Soviet Union, for farming is by far the most important economic activity of the country. That Russian production of field crops, as well as of other agricultural products, is very important even under present conditions of readjustment, is seen from the following figures presented to the International Economic Conference at Geneva, in May, 1927:

U.S.S.R. AGRICULTURAL PRODUCTION.

Crops	Unit of Measure	Production, 1925
Wheat	metric quintals	179,932,000
Rye	" "	208,302,000
Barley	" "	59,813,000
Oats	" "	101,857,000
Maize	" "	44,823,000
Potatoes	" "	442,806,000
Flax (fibre)	" "	4,039,000
Hempseed	" "	5,612,000
Hemp (fibre)	" "	4,489,000
Linseed	" "	6,170,000
Tobacco	" "	925,000
Sugarbeet	" "	69,109,000
Beet sugar	" "	9,828,000
Wool	metric tons	88,500

Limits of space will not permit of any thorough analysis of agricultural conditions in the Soviet Republics, but reference may be made to some of the outstanding facts. It is calculated that Russia's wheat production stands second in the world, representing 17 per cent. of the annual supply. Rye stands first, equalling 45 per cent. of the total production. Barley also stands first, amounting to 60 per cent. of the world supply, while oats is second and equals 15 per cent. of the annual output of the world. Potatoes are first in the world, representing 23 per cent. of total production, while Russia produces over half the world supply of flax fibre. Hempseed represents 90 per cent. of the world supply, and hemp fibre 60 per cent., standing first in their respective categories. The sugarbeet output is the third in the world, beet sugar representing 12 per cent. of total world production. In addition to

this vast agricultural wealth, the Soviet Republics are immensely rich in forests, in petroleum, in minerals, and in some of the precious metals, notably platinum.

The U.S.S.R. occupies a vast area of 21,300,000 square kilometres, stretching from the Baltic Sea to the Pacific Ocean, and from the Arctic to the torrid steppes of Turkestan. It is the largest continuous domain in the world, constituting one-sixth of the total surface of the earth, being surpassed in extent only by the British Empire. Since the Baltic and the Black Sea are not directly connected with the ocean, and since the shores of the Pacific and the Arctic are frozen for the greater part of the year, Russia is essentially a continental power. This characteristic feature of the country is most prominently revealed in its climate. As the oceans do not exercise any great influence, the difference between the annual maximum and minimum temperatures increases from the north southwards, and from the west eastwards. The winters are extremely cold, even in the Odessa territory in the south, while very severe weather is experienced in Eastern Siberia. The summer is, on the other hand, hot, varying in intensity from the north to the deserts of Turkestan. Another consequence of remoteness from the sea is the comparatively low rainfall, the maximum in the north being 60 cm. per annum, and in the south 30 cm. The rainfall in the north is regularly distributed throughout the year, thus preserving the largest forest area in the world, amounting to 600,000,000 hectares. On the other hand, the lack of moisture in the south, consisting only of showers of rain in the spring and summer, accounts for the vast steppes of the Ukraine and of Western Siberia. The fertile soil of the south, the so-called black earth region of the Ukraine, is rich in humus, and is one of the great granaries of the world. The sub-tropical climate of the Crimea, the Caucasus and Turkestan makes it possible to cultivate tobacco and grapes. Tea culture is practised around Batoum, and cotton growing in Aserbeydshan and Ferghana.

As has been said, the U.S.S.R. is essentially an agricultural country, about 80 per cent. of the population consisting of peasant families. Farming was always low-grade, characterised by primitive methods of cultivation. There was little or no use of machinery on the Canadian scale, and an almost total lack of artificial fertilisers where most required. As a consequence, crops per hectare were small, except in the rich Ukraine region. Methods of cattle-breeding were obsolete, as likewise the feeding of livestock. The low quality of cattle, swine and sheep, together with the scanty yield per hectare, sharply differentiated Russian agriculture from that of Western Europe, and more particularly from that of Canada and the United States. Organisation of the rural economy was chiefly conspicuous by its absence, the lands being cropped year after year by the same species of grain. Farms were small, with the exception of the great estates of the aristocracy, and the fields scattered. Relatively to the cultivated area of the country, there was a dearth of draught animals, although both oxen and horses were used for work on the farm. There was an insufficient number of cattle for all purposes, and the land could not be properly manured. An extremely small part was played by cultivated grasses and root

crops, and other non-grain plants. All these, and other factors, had finally depleted the fertility of the soils over extensive areas. The lack of educational facilities for the peasant masses, the fixed social system which denied scope for the natural ambitions of the small cultivators, and finally the low living standards of the people all combined to thwart the development of Russia's amazingly rich land resources.

The root cause of Russia's backward agricultural condition, however, should be looked for in the conditions which prevailed in the villages before the Revolution. Until the year 1861, the system of serfdom reigned in Russia; but even after the liberation of the serfs and the peasants had become legally free, they found themselves in a position that gave the large landowners mastery over them. While a considerable amount of land was owned by rich peasants, the small peasant holdings afforded only a meagre living, and many of the peasant farmers held their land under the tenancy system. The Tsarist government adopted the deliberate policy of formulating a programme in the interests of the wealthy agrarian class. In the result, Russian peasant agriculture could develop only very slowly.

As is well known, the Revolution completely obliterated the landed aristocracy. A small part of the former estates is being used as model state farms—the so-called Soviet estates. The greater part of the land, however, was distributed among the peasants. Landlordism was swept away, and the landlords themselves were disfranchised. Nevertheless, the positive results of this policy up to the present have been comparatively meagre. The chief effects were found in a radical regrouping of landowners, and a diminished production from the soil. It yet remains to be established whether the multitude of small farms can produce the same volume of grain and other products. Moreover, the richer peasants lost, by confiscation, a considerable number of animals, and many of their agricultural machines and implements of production, all of which were distributed among the poorer peasants and the village communes. Poverty, both of the peasants and of the state, has prevented the quick recovery of farming and the providing of essential materials and livestock for efficiency. It is scarcely necessary to add that the Great War, followed as it was by prolonged civil strife, completely demoralised the economic life of Russia, stripping the villages of able-bodied men and sweeping the country clear of livestock. On top of all this, came the calamitous crop failures of 1921-1922, which added to the poverty and wretchedness of the entire nation.

As a result of all these calamities, the area under cultivation within the confines of the present Soviet Republic, shrank from 109,000,000 hectares in 1913 to 74,000,000 hectares in 1922. The number of horses, during the same period, fell from over 30,000,000 to 19,000,000 in 1922. The holdings of large cattle declined from 50,400,000 in 1916 to 33,100,000 in 1922, and swine from 15,500,000 to 7,700,000.

Combined with the deterioration of the farms was a heavy decrease of production of all the agricultural necessities of life. The peasant supported only those branches of production which ministered to his own requirements. Production for the market was reduced to

a minimum. The cultivation of cotton and tobacco was reduced ten-fold, of sugarbeets fourfold, and of flax twofold. Supplies of wheat and barley did not suffice even for domestic consumption. With the termination of the civil war, and the introduction of the New Economic Policy in 1921, the peasants were permitted to exchange their products for manufactured goods on a freer basis. The Soviet State changed its policy of requisitioning the surplus supplies of the farmers; and the better harvest of 1922 enabled the peasants to make a fresh start. Since that year there has been a considerable improvement in the agricultural situation. Acreage has been greatly increased, especially for the industrial crops. Thus, the area under sugarbeets was doubled in two years, and that under cotton and tobacco multiplied by six. Somewhat slower progress has been made in replenishing the stocks of working horses and dairy cattle; and yet considerable advances have been made, the numbers of each being increased by 7 per cent. and 15 per cent. respectively, in two years. An effort has been made to restore the home and foreign markets, by encouraging the co-operative agricultural societies, and by improving the technique of peasant farming. There is an increasing demand for improved implements and tractors, for the advice and supervision of experts, and for bulletins on the various branches of farming. In discussing the situation with specialists in Moscow, both government officials as well as university instructors, it was clear that the Soviet authorities are working earnestly to improve production and living standards among peasant farmers.

THE RUSSIAN DAIRY INDUSTRY.

The improvement of pig production in the Soviet Republic, as in Denmark and elsewhere, is closely associated with the development of dairying. It is important, therefore, to understand the progress that is being made in this direction within the confines of the U.S.S.R. Natural and economic conditions in that territory place it in a favourable position to produce and export butter of a good quality. Before the War, exports of butter from Russia represented a considerable part of the export trade of the world. During the period 1909-1913, it amounted to 21.2 per cent. of the world export trade, coming second only to Denmark. So extensive was the Russian trade in this important commodity that it attracted the attention of the leading dairying countries throughout the world. The following figures indicate the extent and development of the business:

RUSSIAN BUTTER EXPORTS, 1895-1913.

Year	Cwts.	Year	Cwts.
1895	94,503	1908	1,006,967
1899	203,104	1912	1,435,484
1901	383,730	1913	1,535,762
1905	783,100		

Exports amounted to approximately one-half of the supply offered for sale, the remainder being marketed in domestic urban communities. In 1913, the home market absorbed 1,400,000 cwts., about 3,300,000 cwts. were consumed by the peasant farmers, and 1,535,000 cwts. were

exported. The Russian dairy industry, in common with all branches of farming, was demoralised by the Great War and the ensuing civil strife, with the result that in 1919 the amount of butter available for sale comprised only 8.5 per cent. of the supplies marketed in 1913. By 1921, however, the industry once more began to make progress. It required two years more to place the industry in a position to engage again in the export trade, and further years of organisation before it began to approach pre-war levels. The following table shows the progress that has been made:

TOTAL BUTTER PRODUCTION IN THE U.S.S.R.

Year	Cwts	Exported, Cwts.
1921	359,838	...
1922	444,961	...
1923	590,200	99,600
1924	884,200	377,000
1925	1,147,600	491,800

Weather conditions were unfavourable in the early months of 1925, nevertheless the Union manufactured 38.9 per cent. of the amount of butter offered for sale in 1913. During the years 1909–1913, Great Britain took 43.6, Germany 34.4, and other countries 22 per cent. of Russia's exports, while in 1925 Great Britain absorbed 59.4, Germany 33.4 and other countries only 7.3 of the total exports. The relative position of Siberian butter in the British market is as follows:

Year	Total Imports into United Kingdom	Imports of Siberian Butter	Per Cent. of Total Imports
1913	4,139,028	751,414	18.2
1914	3,984,204	616,380	15.5
1915	3,853,855	1,017,507	26.4
1923	5,095,511	30,163	0.59
1924	5,287,233	282,585	5.35
1925	5,824,501	292,226	4.99

Because of the vast extent of the country, climatic conditions that should be favourable for the production of healthy animals, and excellent pastures, the U.S.S.R. is in a strong position for further developing dairying and pig production. Up to the present, western and central Siberia and the territory bordering on the Ural Mountains have been the chief source of supply of export butter. It is planned, however, as soon as possible, to add many additional districts in European Russia to the territories from which export supplies may be drawn, but at present these supply only the domestic market. The butter, not only from Siberia, but from the Ural provinces as well, is known abroad as "Siberian." It has excellent qualities, smoothness of texture and keeping properties. Every effort is being made by the authorities to improve the quality of the product. It is recognised that there are defects, but these are attributed chiefly to inferior creamery equipment, and lack of adequate transportation facilities. Legislation has been enacted prohibiting the use of borax, or adding soda or lime to neutralise the cream. On the contrary, an attempt is being made to retain the natural qualities by adopting modern scientific methods of production.

The quality of the milk supplied to the creameries in the butter-producing regions is of a high standard. The average percentage of fats is 4.53, rising during the autumn season to even higher figures. The rich, clean pasturage and the breed of cows are chiefly responsible for the excellent quality of the milk. In the winter, the cows are fed extensively with hay of a characteristic green colour, to which may be attributed, in part, the delicate flavour, the firm texture, and the keeping qualities of the product. As is well known, the fat content of Siberian butter is very high, in some cases from 3 to 6 per cent. higher than competitive products.

The official registration of all dairies, creameries and factories engaged in the production of butter and other milk products is now obligatory. The butter destined for export is now graded at the creameries, and again at the port of shipment. A final practical and analytical examination is made in London, before the butter is placed on the market. It is believed that the present defects of the Siberian product can be remedied. These are due in large part to the great distance of the sources of supply from the final markets. Butter is transported in the heat of the Siberian summer, sometimes as far as 2,000 miles, by road, rail, and inland waterway, before it reaches the steamer that carries it to market. Yet, as has been noted, improvements in transportation and other facilities are being effected that should be of great value in improving the quality of the product at the point of marketing. At the same time the creameries are being equipped with the latest machinery, and new modern plants are being established. Both managers and creamery workers are being given instruction in scientific methods of production. In addition, the All-Russian Central Union of Co-operative Creameries (Maslozentr), is striving to secure uniformity in the quality of the output of the many different local plants.

THE CO-OPERATIVE MOVEMENT IN RUSSIA.

The peasant co-operatives play an outstanding part in present-day dairying in Russia. This was also true of the industry before the war. The Siberian creamery associations, through their central union, built up a considerable butter export trade some twenty years ago. In 1907, the Union included 2,038 local co-operative groups, and made rapid progress notwithstanding the suspicious attitude of the government. The manufacture of commercial butter practically ceased during the civil wars, as likewise the activities of the co-operatives. In 1921, the co-operative movement began once more to make headway; and in July, 1924, the All-Russian Union of Co-operative Dairies was launched, followed in September by the Siberian Territorial Union of Co-operative Creameries. Maslozentr (All-Russian Union), on January 1, 1926, comprised sixty-three territorial unions, and 5,084 locals, making and selling dairy produce. These organisations owned 5,376 creameries, and also 2,359 depots for receiving milk. The membership was 918,141, and the milk cows owned 1,738,858. In the U.S.S.R. there were also about 1,000 co-operative milk societies not belonging to any union.

Siberia occupies the first place in the dairy co-operative movement. Of 7,268 villages, 4,129 or 56.8 per cent. are associated with co-operative creameries. Individual peasant farmers to the number of 461,201 belong to the various locals; and they owned 980,975 cows, or 69 per cent. of the total number in Siberia. The local society receives the milk from its members, and produces butter, cheese and other dairy products. The regional union collects the product of the locals, grades and arranges it for marketing, and stamps it with the trademark of the union. On receipt of instructions from Maslozentr, the various commodities are forwarded to market. Maslozentr takes care of all sales, at home and abroad. It is the principal exporter of Russian butter, and it is responsible for all agreements concluded, on behalf of Russian co-operators, with foreign buyers.

It is provided that no department of the co-operative organisation shall enrich itself at the expense of another. After the final accounts of all sales are made up, the peasant farmer receives an additional sum, when the advance payment falls below the net returns. This additional sum is paid out only after the expenses of all activities are covered, in accordance with the resolutions passed at the meetings of the co-operative societies.

Maslozentr, while not the sole, is the largest exporter of Russian butter, drawing the bulk of its supplies from Siberia and the provinces adjacent to the Ural Mountains, and only a small percentage from European Russia. This central organisation also owns a number of manufacturing and trading establishments. At its factory, "Ideal" dairy utensils and appliances are made, including cans, pails, tubs, sieves, butter-workers, etc. Its central dépôt in Moscow is a huge establishment, which was built and equipped as a model plant. There are departments for receiving and distributing fresh milk, and for manufacturing butter, cheese and other dairy products. During the year 1925, this depot received 2,206,000 gallons of milk, of which 1,607,000 gallons were retailed, the balance being processed. Maslozentr owned in the same year sixty-one retail shops in Moscow; and the sales, chiefly of dairy products, amounted to approximately \$5,000,000.

But the co-operative movement in the Russian dairy industry has for its object not only the profitable sale of products supplied by the farming community: the most vital aspect of its activities is the permanent improvement of milk production by the individual farmer, and of butter production in the local factories. Maslozentr and Sibmaslosoyus not only attempt to increase sales at home and abroad, and to properly equip the industry, but also to encourage a greater production of quality milk. To that end, they have established milk recording unions, and have purchased high grade breeding animals to improve the domestic stock. They encourage the building of modern creameries and cheese factories, the installation of the latest equipment, and the use of the most effective scientific manufacturing methods. They are giving great attention to the proper rearing and feeding of dairy cattle; and are providing better cold storage facilities. These policies are being vigorously carried out in practice. Each separate co-operative

society is making deductions from gross income to bring this ambitious programme into effect as soon as possible. Relying on these funds, and on large credits advanced by the state, Maslozentr proposed, during the financial year 1925-1926, to spend upwards of \$4,000,000 for the erection of creameries, cheese factories, equipment and repairs.

Without attempting to give details of this work of reconstruction in the dairy industry, the following outstanding features may be emphasised: the establishment of schools and experimental stations; the giving of special courses of instruction in dairy farming; and the conducting of excursions to dairying centres and places of co-operative interests. In addition, study circles have been organised; milking competitions under sanitary conditions planned; cattle exhibitions arranged; and courses in the breeding, rearing and feeding of calves offered. In a word, Maslozentr, with the aid and encouragement of the state, is attempting to apply to the Russian dairy industry those methods and policies that have met with most success in Denmark, the British Dominions, and the United States.

At present, only a small percentage of the milk produced in the U.S.S.R. is marketed. When the lessons now being taught on the importance of milk recording, breeding and feeding are taken to heart, one may expect an increase of at least 50 per cent. in the milk processed. Development is most rapid just now in Siberia, the Ural territory, in the Caucasus, southern Russia, and on the Volga. The following table gives the number of cows in the U.S.S.R. in the years 1916-1925:

NUMBER OF COWS IN THE U.S.S.R.

Year	In Thousands	Per Cent. in Relation to 1916
1916	22,125.8	100
1922	19,533.7	88.2
1923	20,091.4	90.8
1924	22,118.1	99.9
1925	23,849.2	107.7

PIG PRODUCTION IN EASTERN EUROPE AND THE BRITISH BACON MARKET.

In the light of previous discussion, the situation with respect to pig production in some of the Baltic States, Poland and Russia, and the relation of that supply to the British market, may be briefly analysed. As the Baltic States and a large part of Poland were formerly included in the Russian Empire, it is difficult to present more than an approximation of their pre-war livestock holdings. The following data, however, indicate fairly exactly their holdings of pigs in the years 1913 and 1925:

Country	1913	1925
Russia	16,481,000	14,220,000
Estonia	274,000	332,000
Latvia	557,000	497,000
Lithuania	1,350,000	1,600,000
Poland	5,486,000	5,300,000

It has been shown in the examination of agricultural conditions in these several countries that the pig population of each decreased seriously during the War, but that through co-operation among the farmers themselves, supported by the financial aid and supervision of the state, rapid recovery has been made. Pig breeding societies working in co-operation with the several departments of agriculture have imported improved breeding stock, especially Yorkshire boars. Thus, the various breeding centres have accomplished much by way of producing the bacon type of pig for the British market, although personal observation goes to show that a great deal more remains to be done before the Danish standard of production shall have been attained.

Considerable success, in view of the relatively short time in which agriculture in these countries has had the opportunity to adjust itself to the radically altered post-war conditions, has been achieved both in improving the type of pig, and in manufacturing bacon for the English market. Prior to 1925 importations from these countries, with the exception of Latvia, were small; but a remarkable expansion occurred in 1926, particularly in the exports of bacon from Russia and Poland, despite the decline in price. In 1925 Polish bacon sold considerably higher than that from the other countries, but in 1926 the spread had been so narrowed that there was little difference between them.

As has been already explained, the Russian dairy and bacon trades are working under difficulties due to the lack of adequate transportation facilities and necessary capital. Along with the building of new creameries it is planned to erect two or three bacon plants, capable of handling 1,000 pigs weekly. Some twenty-eight new abattoirs will also be erected in the near future. Considerable numbers of Russian pigs are forwarded to Estonia and Latvia for slaughter and export. One of the outstanding difficulties with which Russian bacon producers must contend is the long time required to transport bacon from the producing areas to the London market. It is difficult to say precisely how much time is consumed between the shipping of bacon from the factory until it reaches the English retailer; but it is long enough to demand a strong cure for the Russian product. The journey from producing areas takes, on the average, at least ten days, and in other instances the time is much longer. This bacon must compete with the Danish product, which enters into consumption within a week after it is forwarded from the factory. The Russian bacon is marked with a government brand, signifying its freedom from disease.

Latvian bacon entered the British market before the War, but the trade was not resumed again until 1922. It was first recommended by a large private firm buying through agents in Latvia and the adjoining Baltic countries. Then the Latvian Central Co-operative Society, "Konsums," whose activities have been already outlined, entered the field. It has fifty-one collecting stations, which supply live pigs for slaughter to the central plant at Riga. This factory can, with its modern equipment, handle about 1,500 pigs per week. Konsums has received financial support from the government, but is handicapped in extending its operations by lack of essential capital.

Estonia has a bacon industry of comparatively recent growth, operating through two bacon plants situated at Reval. "Kulmetus" processes pigs imported from Russia, while the Estonia Central Agricultural Company produces bacon from pigs furnished through the co-operatives. The state carefully supervises and encourages the industry. All bacon for export is branded; that made from Russian pigs is marked, "Estonian Bacon Prepared from Imported Animals." Poor transportation, both by land and water, prevents the industry from expanding as rapidly as otherwise would be possible.

The Polish bacon industry owes its extraordinary development to the embargo placed by the British Government on the importation of fresh pork from the Continent, in June, 1926. As it was of extreme importance to the Polish Government to find a market for the country's surplus pig production, it organised a number of meetings, at which various interests were represented, to devise practicable methods of dealing with the new situation. The result was the formation of the Syndicate of Bacon Exporters, which operates under the protection and support of the Ministry of Trade and Commerce. This syndicate supervises the construction and improving of bacon plants, and also controls the quality of export bacon. In addition, the Government is building a magnificent new harbor at Gdynia, near Danzig, at which it is proposed to provide all facilities for encouraging the bacon trade. Through control of the railways the Polish Government is in a position, if it so desires, to subsidise, by granting lower freight rates, any branch of the nation's agriculture.

MARKET PROSPECTS FOR BALTIC BACON.

Bacon from the Baltic countries and Poland is retailed chiefly in London, South Wales and the North of England. It lacks uniformity in quality, and does not move in steady volume to market. Moreover, it is strongly cured, and therefore does not meet the requirements of the better class trade. As a consequence the prices secured are below those paid for bacon from other countries. In 1925 and 1926, Danish bacon carried a premium on Baltic bacon of from 10 to 20 shillings per cwt. Although improvements have been made in the past few years, Danish standards of production, processing and marketing are still far in advance of what the Baltic States, Poland and Russia have achieved. Because of the difficulties mentioned, lack of uniformity and standardisation of supplies, costs of transportation and the like, it will probably be years before these countries seriously count in influencing the volume of trading on the British markets. It is significant that the Union Cold Storage Company, which operated several factories in Russia before and since the War, has abandoned this field. On the other hand no less an authority than Mr. G. J. Nicholls has stated that the best quality of pre-war Russian bacon left little to be desired. In his opinion Russia is an ideal country for the development of the bacon industry. Under the conditions that obtain private enterprise is discouraged, but much may be expected from the work not only of the co-operatives, but also from the energetic action of the various governmental authorities.

CHAPTER IX.

IRELAND: BACON PRODUCTION AND RURAL ORGANISATION.

IRISH AGRICULTURAL PROGRESS.

Modern agricultural development in Ireland is associated chiefly with the commanding personality and driving energy of the founder of the co-operative movement, Sir Horace Plunkett. In his early efforts to raise the standard of Irish farming his aim was, to use his own words, "to make a people who are not farmers prosper in a country dependent upon farming." He and his associates in 1889 were attempting to give leadership to the English-speaking world in the building up of a new rural civilisation, urgently needed to restore the balance between urban and rural activities in the national economy of western peoples. Some eight years later they were joined by Mr. George W. Russell (better known as A. E.), editor of the *Irish Homestead*, whom Sir Horace has called the outstanding Irishman of his generation.

The founders of the co-operative movement saw that the Irish land question was nearing a settlement on the basis of the transference of the land from the landlords to the tenants. Eight years before Gladstone had put through Parliament his great charter of agrarian reform, known as the Three F's: that is, Fair Rent, Fixity of Tenure, and Free Sale. Rents thereafter could be fixed by an impartial tribunal; the tenant could not be evicted so long as he paid his rent; and if he wanted to leave his farm he could sell his interests in it to the highest bidder. When these reforms had become actualities, it was felt by the leaders in the co-operative movement that the farmers would now attack the problem of properly cultivating the soil, and that purely pastoral activities would diminish in importance.

The above reforms synchronised with another great revolutionary change, namely competition from America, Australia and, because of improved transportation, even from Russia and the Scandinavian countries. The fall in the price of farm produce that occurred in the last quarter of the Nineteenth Century seemed to outweigh the benefits of improved conditions of land tenure. It was clear that only a vastly improved agricultural technique could save the situation. The average Irish farm does not exceed thirty acres of productive land. For permanent success it is essential, therefore, to practise intensive cultivation, and this notwithstanding the fact that the trend is toward large-scale production and distribution everywhere. It was obviously necessary to organise the small-scale farms in such a way that they could secure the advantages, in whole or in part, of large-scale operation. The only alternative in Ireland was the easy but uneconomic and unprofitable grazing of a few head of stock. The leaders of the co-operative movement determined, therefore, to organise the country on a comprehensive basis, beginning with the parish and ending with the nation.

It was a formidable undertaking. Irish agriculture was backward on the technical side; it was still more backward in its business

aspects. Irish farmers were embittered and depressed because of their long fight for economic freedom. They were inclined to look to the politicians to cure their economic ills. The politicians, it is true, had secured favourable terms for tenants; they were unable, however, to teach them how to make the best use of their new freedom. The reformers were, on the contrary, able to deal with practical questions in a practical way. They were not mere idealists, but students of co-operation in its technical aspects. They had studied the great co-operative movement in England, and were students under Holyoake, Vansittart, Neale and Hughes. They knew that the English movement had not touched agriculture, and that it had been concerned almost solely with distribution. Yet Sir Horace Plunkett and his associates were convinced that the co-operative idea could be applied in a practical way to agricultural production. They also decided to confine their activities to raising the living standards of the rural community, believing that if its basic industry were made profitable the entire nation would participate in the prosperity so created.

This Irish movement was bitterly opposed in the beginning by the country traders, who realised that the joint purchase of farm supplies and the joint selling of agricultural products would deprive them of a considerable part of their business and profits. The slogan, "Organised Self-help," was widely used to rouse the farmers to a realisation of where to find the real solution of their economic problems. It was decided to launch the co-operative campaign in the south for various reasons, but chiefly because it was the centre of the dairying industry, Cork butter being famous for its fine qualities. Moreover, dairying then was at the dawn of its industrial revolution. The new machinery, invented chiefly in Scandinavia, had made factory production far more profitable than the domestic industry. The market demand more and more required volume of product of a uniform quality. The separator, the steam churn, the butter worker, and many other technical appliances made it possible to meet these requirements. The Danes and the Swedes, who had adopted capitalistic methods, were already competing seriously with Irish butter in the English, and even in the Irish market.

In the rich dairying districts of Tipperary, Limerick and Cork commercial creameries had already been established before the co-operative movement had got under way. The owners were able to pay a far higher price to the farmer for his milk than it was worth to him for butter-making under the old plan. When the farmer once abandoned domestic production, the price of milk was reduced to the lowest he could take and remain in production. An effort was made, therefore, to make clear to producers that by combining their funds, their credit and their energies, they could own and operate the factories and thus secure the profits for themselves.

There was the further difficulty of purchasing the essential supplies of machinery for use in the factory and on the farm. The manufacturers were quite willing to sell machinery to organised associations founded upon the joint-stock plan, but had no patience with the theorists

who insisted that co-operative principles must be enforced. Finally, the farmers rallied about the co-operative organisation of the dairying business. They enforced the principle of one man one vote, and the equal right of all to participate in deciding questions of policy and management. The profit on shares is limited, generally to 5 per cent.; the balance of net profits is divided among suppliers of milk, according to the amounts and qualities delivered. In some creameries this net profit is also shared with the workers, thus encouraging all the participants in the undertaking to labour for its success.

As has been said, Ireland is a country of small farmers; and the great majority of those who have joined the movement are actual workers upon the land. As only the heads of families join the societies, it may be estimated that five times as many participate in the benefits received. Up to the end of the War, although the co-operative movement had embraced every phase of farming and its business, very few failures had occurred. The first dairying society was established in 1891, and ten years later there were 152 societies with a turnover of about \$2,500,000. By 1919, after years of propaganda and labour, the number of dairying societies was 439, the membership 53,240, and the turnover \$35,000,000. War prices, of course, immensely increased the value of the output; yet there was an actual increase in the volume of business, notwithstanding the decrease in the milking stock.

The co-operative movement in Ireland, the success of which up to the outbreak of the political troubles was one of the most encouraging features of modern agriculture, was concerned not only with dairying, but with every form of business and commerce that concerned workers on the land. Taking the circumstances of Ireland into account, progress had necessarily to be slow. Yet efforts were made to deal not only with the comparatively simple processes of collecting, grading and marketing eggs, but also with the highly technical business of manufacturing bacon and other pig products. Although the political troubles and the collapse of war prices have retarded the movement, it is safe to say that the co-operative idea has taken firm hold of the imagination of Irish rural workers. It is only a question of time when the entire agricultural interests of the nation will be organised along co-operative lines. A large number of farmers availed themselves of the services of the societies without becoming actual members. Their patronage was accepted, because volume reduces costs of production. The following figures, which cover the period up to the serious outbreak of political trouble, are illuminating: In 1899, there were 424 societies of all kinds with a membership of 39,852, and a trade turnover of \$45,000,000. In 1919, there were 1,028 societies with a membership of 135,369 and a trade turnover of \$55,000,000. The total turnover from the commencement of the movement to the end of 1919 was \$350,000,000. In Ireland, as elsewhere, there is a great amount of co-operative activity that does not admit of statistical treatment, such as the joint ownership of expensive agricultural machinery and breeding stock. In Wexford, a large meat-packing establishment has been in existence for many years. When the recent political trouble

developed, many farmers were unwilling to risk their money in enterprises involving the installation of costly plant and machinery. Nevertheless, at that time a large part of the funds had been subscribed for the construction of the largest meat-packing establishment in the United Kingdom.

It was planned in many instances to expand the activities of certain societies, so that not only the requisites of farming, such as implements, seeds and manure, would be bought and distributed on a co-operative basis, but also many household commodities such as are distributed by English co-operatives engaged in the retail trade. There was also considerable pressure brought to bear upon the organisations requiring them to enter the banking and insurance fields. Other interests were to be brought within the scope of the movement, such as the electric lighting of villages, in which the community as a whole might be interested. This new type of society, the "general purpose" society, would be expanded on the basis of the existing organisations, all of which could undertake wider work under their existing constitutions. Some 400 of these societies, old and new, were functioning at the end of 1921. Even societies, started with limited objectives, such as the dairying, the flax and the poultry societies, were encouraging such developments. Although co-operation languished in Ireland during the political troubles, the seed is planted deep in Irish soil, and will again spring to life when the country is able once more to centre its thought and energy on industrial and economic reconstruction.

It was not until the group of reformers had carried on their programme of education and instruction for five years, that an attempt was made to establish a central organisation. In the spring of 1894, the Irish Agricultural Organisation Society (I.A.O.S.) was founded at Dublin at a gathering of influential men interested seriously and actively in the movement, its accomplishments and its aspirations. A few years later similar agricultural societies were launched in England and Scotland. The I.A.O.S. is governed by a committee, the majority of whose membership is composed of representatives from affiliated societies, although representation is given also to individual subscribers. The committee is presided over by a president and a vice-president, Sir Horace Plunkett and Father Finlay holding these respective offices for many years. It is interesting, and important, to observe that while the members of the central body and its various branches are free to expound any theory or doctrine they care to uphold on other platforms, all questions of a sectarian or political character are rigidly excluded from discussion within the co-operative movement itself.

The staff began its work in a small Dublin office under Mr. R. A. Anderson as general secretary. Young Irishmen, denominated "organisers," were carefully selected and trained for the field work. The five organisers covered the whole of Ireland, held meetings of farmers preparatory to the formation of societies, and saw that the conditions were favourable to success before actually founding a new co-operative. They were assisted by a staff of some half dozen men, chosen for their

expert knowledge of dairying, the scientific treatment of flax, and for their business training. An expert accountancy division supervised local accounts and rendered required assistance to the several societies. There was a bacteriological laboratory under the direction of a scientist, which gave technical aid in the dairying industry. In 1908 seven hundred friends of Sir Horace Plunkett presented him with a spacious mansion at 84 Merrion Square, Dublin, now known as Plunkett House, to be used as headquarters for the I.A.O.S. Here, also, "A. E." has his offices in which the *Irish Homestead*, the official organ of the movement, is edited—now incorporated with the *Irish Statesman*.

To a certain extent, the I.A.O.S. has been subsidised from government funds. At first it drew support from the Department of Agriculture and Technical Instruction, which was set up by the Imperial Parliament in 1900, and of which Sir Horace Plunkett was for its first seven years the acting head. This department recognised that to carry on its own work successfully the farmers must be organised. It therefore granted financial assistance to the educational work of the I.A.O.S.; but as it was a governmental institution party politics entered into its activities, and under pressure from Irish traders the subsidy was withdrawn. The loss was, however, soon made good from another source. In 1910 a new institution, the Development Commission, was established, and given funds to be used for the encouragement of agriculture. The commissioners were an extremely able body of public servants, and they quickly concluded that one of the best ways to aid agriculture was to give all possible assistance to the organised farmers in carrying forward their educational work. The Scottish and English societies were first helped, and it was again only after a struggle that, for the same reasons, the Irish organisation received equitable treatment. Such aid, of course, must not violate the basic principle that it may be regarded as a supplement, but by no means a substitute, for organised self-help.

Sir Horace Plunkett has himself defined the inner meaning of the Irish co-operative movement in the formula, "Better farming, better business, and better living." He is of the opinion that the special contribution of Ireland to the solution of the problem of rural co-operation is found in the clear line of demarcation that has been made between these three aspects of rural life. The pioneers of the movement were interested chiefly in its social and intellectual aspects. True, much was accomplished in the days before the political troubles in energising rural communities in their social and intellectual life. In this phase of their work, the reformers built on the foundations laid by the women's institutes in Canada, and the grange in the United States. But it was recognised that not much could be done until the economic standards of the countryside had been raised. Gradually it became evident that the first phase of revolutionising a moribund agriculture must be economic. Sir Horace holds, therefore, that it is vitally important to begin with the better business part of the programme of social and economic reconstruction. He believes that experience demonstrates that farmers will not avail themselves fully of the technical advice and useful information afforded by government

departments and the universities, or even by the popular press, unless they believe that they themselves will reap the reward that should follow increased volume of production due to increased expenditure of labour and capital. That increased reward in turn will make it possible to raise the level of social and intellectual interests in every rural community. Sir Horace Plunkett's summing up of the situation is expressed in his own words as follows:

- "(1) The vital need of thorough organisation upon co-operative lines.
- "(2) The paramount importance of reliance upon voluntary effort, rather than upon state assistance, in the sure belief that what, by intelligent combination, we can do for ourselves is immeasurably more beneficial than what the best of governments can do for us. And,
- "(3) The insistence upon building up the rural community on its three sides: namely, the technical side, the commercial or business side, and the social and intellectual side."

THE FUTURE OF CO-OPERATION IN IRELAND.

Mr. Lionel Smith-Gordon, director of the National Land Bank, Dublin, a leading authority on Irish agriculture, has stated that the whole question of tillage farming presents a problem to Ireland of great magnitude. In this field he is of the opinion that there is room for tremendous development. Mr. Smith-Gordon criticises a system under which large graziers, renting land from year to year, are able to make a profit while employing only a few men to tend cattle on an area extending over hundreds of acres. This practice has extended to many of the smaller farms; and grass farming, both for stock raising and dairy purposes, has increased to such an extent that the area under the plough has seriously diminished. Mr. Smith-Gordon is of the opinion that an increase in tillage is one of the first considerations for making Irish agriculture efficient and prosperous. It is from such development on the technical side that he believes Irish economic stability as a whole will be established.

The argument runs that agriculture in itself can not produce that broadly-based economy that Ireland desires and requires. Nevertheless, it produces the foundation upon which the industrial edifice of the nation may be constructed. Mr. Smith-Gordon believes that in such a country as Ireland the industries should grow out of agriculture; but that first the farmer should realise that good farming in itself is not sufficient to insure his prosperity—that he should also be a man of business and attend to the details of buying, selling, packing, standardising and the rest if he is to reap in full measure the profits from his industry.

The goal of these post-war reformers is what may be called the industrialisation of agriculture; or, in other words, carrying the processes of agriculture far beyond the mere tilling of the soil or the harvesting of the crop. They believe that every farm should become a sort of factory in itself, or one of the units of a factory that serves an entire district. The products of such factories could be various. Milk could be utilised to manufacture not only dairy products, but many commodities of household necessity, as science has disclosed. The possibilities of bacon plants and abattoirs for the production not

only of foods, but of many articles of commerce are well known. Mr. Smith-Gordon believes there is a great future for the production of industrial alcohol in Ireland, to provide light, heat and power for the nation. Distilleries could be furnished with essential raw materials from specially grown potatoes, as in Germany. It is argued that the profits to be made by the farmer are in direct proportion to the number of processes he can control from the production of the raw material to the finished product. Such an industrialisation of agriculture would provide more employment, build up the country town, produce better relations between the farmers and the workmen, link up the rural with the urban communities in a way impossible in the past, provide cargoes for the merchant marine, and diversify Irish industry and opportunities. With more prosperity in the country not only the great cities, such as Belfast and Dublin, would flourish, but the smaller towns would experience an industrial revival. As an example, even the cans used by Irish creameries are in great degree imported, chiefly from Copenhagen.

To carry out such an extensive programme will, of course, require years of labour, education and planning in Ireland. Mr. R. A. Anderson, associated with the Irish co-operative movement for so many years, believes that the failures that occurred were due not to any flaw in the co-operative principle, but to some flagrant departure from the common-sense programme laid down for the guidance of the pioneers. He mentions two periods of "jerry-building" in the history of the movement. The first was some twenty years ago when the zeal of organisers for "dotting the map" with societies outran their discretion; and the second was during the Great War, when the abnormal conditions brought into existence a number of societies whose foundations were not sufficiently strong to withstand the post-war slump in trade. The civil war led to the destruction of a number of creameries and the disorganisation of the work of the co-operative movement. But Mr. Anderson is of the opinion that Irish co-operation has suffered most from the lack of loyalty on the part of a large proportion of its members. He cites the under-capitalisation of many societies, which forces them to borrow heavily from the banks; the failure of the societies to do more than a fraction of the business available; lack of interest in seeing that the right men are elected to committees, and failure to support the committees when they are obliged to dismiss incompetents. He takes the position that until the members of each society regard it as their own, place all possible business with it and support it loyally with their personal interest, their capital and their trade, it cannot be said that the Irish movement is fulfilling its destiny.

This experienced and keen student of the co-operative organisation of Irish agriculture states that little hitherto has been accomplished in bridging the wide gap between producer and consumer. The creameries have failed to co-operate with each other in placing their product on the market through a central selling body. In the event that a creamery happens to have a manager of selling ability fairly good prices are realised; but the majority have failed to secure the full value of the product. It follows that the unorganised selling of

the bulk of the butter at any price unfavourably affects the market value of the output of the best managed plants. It is essential, therefore, to improve and standardise the quality of the butter output, and market it, if possible, more uniformly throughout the year through a central agency. As matters have stood, even the best plants fail to secure top market prices, while buyers of Irish butter have been able to play off one creamery against another. Managers might well confine their efforts to turning out a product of the highest possible quality, and leave the selling end to a central agency, controlled by the creameries, but specialising in the complex business of placing the product on the domestic and British markets under the most favourable conditions with respect to volume and price. The highest quotation, since the passage of the Irish Dairy Product Act, 1924, has been secured for the output of registered creameries. Under the Act, compulsion became a factor in safeguarding the reputation of Irish creamery products. The legislation could only be welcomed by those factories which already had the essential standards of cleanliness, equipment and technique of manufacture; and if by refusing the term "creamery" to the inferior product, it prevented the depressing of the price of quality butter, the cost of compulsion was certainly not too high. The promised national brand may go a long way in establishing a special quotation for Irish butter of the finest quality. The Agricultural Produce (Eggs) Act has already immensely improved the position of Irish eggs in the British market. Mr. Anderson is of the opinion that Ireland is too small a country economically to adopt "commodity" marketing, but that the Irish Agricultural Wholesale Society might with advantage take over the entire business of disposing of Irish dairy products, eggs, and other agricultural products.

CO-OPERATION IN ULSTER.

After the separation of Northern Ireland from the Irish Free State, in 1922, the I.A.O.S. in Dublin, since it was receiving a grant of Free State funds, was obliged to sever its relations with Belfast. Mr. Harold Barbour thereupon launched the Ulster A.O.S. to carry on the work in Northern Ireland, with Mr. J. Adams as secretary. The Northern Government gave a grant on a *pro rata basis*, and this, with the support of friends and of the various societies, permitted a good start to be made. The number of societies in Ulster, in 1922, was 152, and of these seventy-nine affiliated with the new organisation. It was considered of greater importance to concentrate upon organisation and education of the membership than to attempt to launch new co-operatives, the ground being already fairly well covered. As the support of the societies did not come up to expectations, the Ministry of Agriculture withdrew the grant, and gave its support instead to the Ulster Farmers' Union, generally regarded as a political body. This was done under the impression that the Union would improve the system of marketing agricultural products. It did undertake the purchase and sale of farm products, by organising the Farmers' Produce Company, on a joint stock basis. After two years' trading the company showed a loss of £14,000, whereupon it was converted into a co-

operative society. Efforts have been made to secure closer working relations between the Union and the U.A.O.S., on problems of common interest, but much remains to be done.

The Ulster co-operators are carrying on with a reduced staff, but this does not permit them to take up energetically the work of devising a programme for the co-operative marketing of farm products, in the extension of which there is urgent need. The legality of members' contracts still remains to be put beyond question. In the case of a city milk supply company, which attempted to enforce the five years' binding contract on its members, the Court of Appeal found the agreement in restraint of trade, and the company went into liquidation. It is expected that the Ministry of Agriculture will define a form of contract that will stand in law. In the meantime, the production and marketing of creamery butter has been the greatest achievement of Ulster co-operation. The marketing of eggs co-operatively is also slowly making headway. It is thought that much can be accomplished in the marketing of bacon and cattle on the co-operative plan, as well as of potatoes and grain when Ulster follows the active policy now being enforced by the Free State.

THE IRISH PIG INDUSTRY.

Ireland has long been noted as a pig producing country, and for more than one hundred years has sent bacon to the English market. The product has been of such good quality that it has gradually found an enviable position in the British market, and next to the English, fetches the highest price. Breeding is carefully fostered, and only two breeds receive aid from state funds—the Large White York and the Large White Ulster. The pigs raised are almost entirely of the Large White York breed, which gives uniformity to the product and maintains the high quality. The popularity of this breed is due to the fact that the pigs are thrifty, hardy animals, which make good bacon at an early age. They meet fully the requirements of the export and the home trade, yielding a well-ribbed, long-side carcase with a high proportion of lean meat. The Large White Ulster is heavier necked with a larger proportion of fat, and is utilised chiefly by the northern curers who make rolled bacon. If the production of pigs in Ireland is surveyed over a long period of years, it will be found that the numbers are fairly constant, ranging around 1,250,000. During the investigations carried on at Cork, it was a pleasure to inspect the premises of that fine old firm making the Three Leaf Clover Brand. They have, also, extensive private trade connections with London, and make "Cock o' the South Finest Irish Bacon" for Beer and Sons, London. This bacon is sent to England green, and is finished in London. Grades at the factory were "Prime" and "Irish Produce." This factory also handles pigs for the farmers of the Cork branch of the Irish Farmers' Union at two shillings per head and the offal. The farmers then ship the product to the London market. At the time of inspection this factory was killing 250 pigs a day, but there was some complaint of lack of regular deliveries. At this plant, also, three pounds were taken off each pig for shrinkage.

Ireland, because of its proximity to the British market, is in a strong position to dispose profitably of its pigs and their products. Reference has been made to the steadiness of the pig production in that country, but that has not been so characteristic of the post-war period. In 1925, it is calculated that Ireland exported 1,284,351 pigs to Great Britain in one form or another. In 1921, there were only 977,152 pigs in the country, as compared with 1,351,694 in 1923; but the numbers decreased during the next two years to 843,081, in 1925, owing to the reduction of the potato and grain crops. Pig production in Ireland is essentially a small farmer's business. The chief feeds are potatoes,



Dublin Cattle Market. By kind permission of The Irish Times.

corn and milk; if potatoes are plentiful the small farmer will keep pigs, and even add to his supply. Nevertheless, as has been stated, apart from the disturbing influences of the Great War and the following time of trouble, pig production in Ireland has been maintained at a fairly constant level. This is significant, when it is recalled that the production is largely for the bacon and fresh-pork market in England, Ireland's own fresh-pork market being relatively negligible. As has been noted, premiums are awarded both by the Irish Free State and Ulster to suitable boars, but these are confined to the two breeds mentioned. In 1925, in the Free State, where the export trade is confined principally to Wiltshire sides, 419 premium boars were Large Whites, and 55 Large White Ulsters, the latter being used in certain counties

of the Free State which supply pigs for the rolled bacon trade. In Northern Ireland, premiums were awarded to 94 boars in 1925, of which 91 were Large White Ulsters and three were Large Whites. Bacon production in Northern Ireland is largely confined to the rolled bacon trade.

TREND OF VOLUME OF IRISH EXPORTS.

In the December, 1925, report of the Department of Industry and Commerce of the Irish Free State, on trade and shipping statistics, a very interesting table is presented, giving the salient facts on the volume of Irish exports, along with a comparison of the corresponding exports, for the same period, of Danish products to Great Britain. Into the methods of construction of this table it is not necessary for present purposes to enter; it must suffice to say that the volume of exports for the years 1911-1913 has been taken as the base, and made equal to 100, the exports for succeeding years being compared with the "normal" exports of the pre-war years mentioned. The table is as follows:

ESTIMATED VOLUME OF EXPORTS FROM THE IRISH FREE STATE.

	1911-1913	1919	1920	1921	1922	1924	1925
Sheep and lambs	100	80.2	86.6	94.1	111.2	94.7	65.1
Cattle	100	101.9	107.9	105.0	129.5	140.8	103.6
Butter	100	47.2	77.4	83.7	91.6	70.3	61.8
Pigs	100	75.1	54.0	23.0	50.2	69.7	29.9
Bacon and hams	100	54.5	74.2	92.5	80.2	81.0	61.5
Poultry	100	108.0	76.3	84.1	77.3	77.0	62.1
Eggs	100	152.6	138.1	140.4	118.9	105.7	107.8
Horses	100	61.5	47.9	72.1	68.0	92.7	65.5
Biscuits	100	94.8	71.1	64.5	60.6	53.1	56.4
Porter	100	98.4	164.3	144.3	117.7	120.8	123.8
Hides and skins	100	101.3	96.6	85.1	110.6	112.7	103.9
Wool	100	87.6	53.1	39.7	135.8	108.4	69.0
Total Volume of Exports, Irish Free State	100	91.3	98.8	97.5	106.5	104.7	87.0
Volume of Danish Exports to Great Britain	100	15.5	48.0	83.6	100.0	139.3	132.1

The exports specified above comprise about four-fifths of the total exports of the Irish Free State, according to value, and from this point of view the second last line showing indices of the volume of the total exports, according to the department, may be considered reliable. The figures for Danish exports are based on the quantities of Danish butter, bacon, eggs and fish exported to Great Britain. These four commodities account for over 90 per cent. of the exports from Denmark to Great Britain.

The table shows that the exports of cattle in 1925 were 3.6 per cent., eggs 7.8, porter 28.8, and hides and skins 3.9 greater than the

average volume of these commodities exported in the period 1911-1913. Other items showed substantial decreases; sheep and lambs, 34.9 per cent., butter 38.2, pigs 70.1, bacon and hams 38.5, and poultry 37.9. But the volume of exports from the Irish Free State in 1925 was the lowest in many years.

As has been noted, Danish exports to Great Britain fell away during the war and were, in 1919, less than one-sixth of the pre-war volume. By 1922 they had regained their pre-war dimensions, and in 1923 forged ahead to a level which they have maintained since. While to some extent the decline in Danish exports during the War, to Great Britain, was compensated by increased exports to Germany and other countries, it would appear that Denmark's exports to all countries had dwindled to about 60 per cent. of their pre-war volume in 1917, and to about 40 per cent. in 1918 and 1919. Ireland's war time experience was much more fortunate. From 1917 to 1919, Ireland's volume of exports, while less than the pre-war average, never went as low as 85 per cent. of that average.

In order to provide such large surpluses of meats and milk products for export, both Ireland and Denmark import large quantities of foodstuffs for men and animals. Ireland imports wheat, wheat-meal and flour, oats, barley, corn, cornmeal, and certain feeding stuffs for animals, including oilcakes. Denmark imports wheat, flour, large quantities of rye, barley, corn, and a heavy volume of oilcakes and other animal feeding stuffs. The Free State imports a considerable quantity of the cheaper grades of bacon, butter, eggs and cheese, exporting the superior product. Denmark secures relatively small supplies of these commodities from abroad, but consumes large amounts of oleomargarine. Of the Free State's total acreage under crops and pasture in 1925, 12.8 per cent. only was ploughed, while Denmark in the preceding year had 56.2 per cent. of the acreage ploughed. The total acreage in the two countries in crop or under pasturage in these years was 12,247,607 and 7,798,713 acres respectively. According to the calculation of the Free State's Department of Industry and Commerce, the net exports per 1,000 acres of crops and pastures, for the Free State, were 2,024 pounds sterling in 1925, as compared with net exports for Denmark in 1924 of 7,074 pounds. On the same basis of calculation, the net imports for the Free State were 896 pounds per 1,000 acres, as compared with net imports for Denmark of 2,347 pounds. It should be added that these figures have reference to exports and imports of agriculture alone. The population of the Free State was 3,163,000 in 1925, and 3,390,000 in Denmark in 1924.

All this merely goes to show that there is scope in the Free State, under the right conditions, for a tremendous agricultural expansion. The Irish Free State has a slightly smaller population than Denmark, over 50 per cent. more cultivable land, but ploughs only a little over a third of the area ploughed in the latter country. But neither production nor marketing is organised on the scientific basis prevailing in Denmark. As has been observed, the Free State's exports of cattle, butter, eggs, etc., are seasonal; hence, as shipments gradually increase,

prices decline. This has been the usual experience of Ireland from one year to another. While under these conditions prices and volume tend to move in opposite directions, greater value tends to follow greater volume of trade. It is quite possible, under these conditions, to show a good national balance, which is very deceptive from the standpoint of the individual producer, for whom prices may not even cover production costs.

It should be observed that there is a specific demand for Irish agricultural products in the British market, and that when supplies of these commodities are limited the deficit is not entirely made good by relatively plentiful supplies from other countries. The following figures make this point clear: The total quantity of butter imported into Great Britain and Northern Ireland increased from 1924 to 1925 by 10.7 per cent., notwithstanding the decrease in Danish supplies of 4.4 per cent., and the larger decrease of Irish Free State supplies of 12.6 per cent. As a result the average price of all butter decreased 3.2 per cent., but the price of Danish decreased only by 1.2 per cent., while Irish Free State butter actually increased by 2.9 per cent. Some light is thrown on the relation between prices, volume of exports, and value of exports, from the above standpoint, in a table prepared by the Department of Industry and Commerce of the Free State. The principal exports, 62 in number, are arranged in five groups according to their change in price between 1924 and 1925. Price, volume and value indices are given for each group:

Exports which have altered in price	Export Index Numbers					
	Price		Volume		Value	
	1924	1925	1924	1925	1924	1925
+15% and over	100.0	126.3	100.0	66.5	100.0	82.6
+5% to +15%	100.0	109.4	100.0	72.3	100.0	78.9
0% to +5%	100.0	101.9	100.0	83.3	100.0	84.7
-5% to 0%	100.0	98.0	100.0	95.2	100.0	93.4
Under -5%	100.0	87.8	100.0	121.7	100.0	104.9
All exports	100.0	104.7	100.0	83.1	100.0	86.2

It will be seen from a study of the above figures that the price and volume indices of Irish Free State exports for 1925 move in opposite directions. While in that year the volume of exports considered decreased by 16.9 per cent., the price increased by 4.7 per cent.

The following figures present the essential facts concerning the volume and value of Free State exports of important farm products from the calendar years 1925-1926, as furnished by the Irish Free State's Department of Industry and Commerce:

Product	Unit	Quantity	Quantity	Value	Value
		Twelve months 1925	Twelve months 1926	Twelve months 1925	Twelve months 1926
Pigs	No.	97,419	229,575	£ 623,837	£1,698,850
Poultry	No.	1,033,239	1,116,033	197,776	206,310
Bacon	Cwt.	453,907	434,030	2,872,744	2,769,321
Fresh Pork	Cwt.	158,951	184,910	822,849	935,755
Poultry, dead	Cwt.	93,908	104,131	573,463	653,516
Milk, fresh	Gals.	481,880	493,504	29,896	27,685
Milk, condensed	Cwt.	58,651	81,864	131,967	149,068
Cream	Gals.	627,530	644,262	355,024	321,971
Butter	Cwt.	401,559	500,887	3,648,024	3,829,636
Cheese	Cwt.	4,313	3,597	21,470	16,129
Margarine	Cwt.	60,312	48,375	190,051	153,458
Eggs, in shell	Gt. hundreds	4,359,249	4,366,236	3,071,784	2,809,099
Lard	Cwt.	32,089	30,903	138,959	124,035
Barley	Cwt.	45,808	388,099	24,315	168,065
Oats	Cwt.	1,099,935	576,585	445,604	211,117
Maize, meal	Cwt.	49,747	49,875	29,640	23,261
Corn, offals	Cwt.	247,319	179,411	81,988	47,312
Potatoes	Cwt.	396,954	340,908	105,874	47,759

During the same years there were heavy importations of wheat, maize, maize meal, wheat flour, oilseed cake and meal, and supplementary animal feeding stuffs. In addition there were considerable importations of bacon and other meats, butter, cheese and margarine. The figures for the calendar year 1926 follow:

IMPORTS OF AGRICULTURAL PRODUCTS, 1926.

Product	Unit	Quantity	Value
Bacon	Cwt.	417,502	£2,189,026
Other meat	Cwt.	.....	454,901
Milk, condensed	Cwt.	14,807	44,347
Butter	Cwt.	58,743	501,339
Cheese	Cwt.	24,461	150,095
Margarine	Cwt.	50,610	168,382
Eggs, in shell	Gt. hundreds	43,988	29,357
Lard	Cwt.	18,126	57,967
Wheat	Cwt.	5,414,783	3,585,681
Barley	Cwt.	116,044	46,701
Oats	Cwt.	268,493	139,729
Maize	Cwt.	6,466,018	2,462,229
Wheat flour	Cwt.	3,196,263	3,103,064
Oat products	Cwt.	219,238	189,008
Maize meal	Cwt.	952,859	435,761
Other maize products	Cwt.	22,894	41,402
Oilseed, cake and meal	Cwt.	936,239	507,467
Other animal feeding stuffs (excluding molasses)	Cwt.	440,252	257,235
Corn offals	Cwt.	493,516	211,554

STABILISATION OF PORK PRICES.

Brief mention may be made at this point to the study, undertaken on behalf of the Ministry, of the prices paid for pork in Ulster markets. The serious situation in the pork and bacon trade during the past two years has made the price problem acute, and has occasioned concern to producers. At a conference summoned by the Ministry, the whole question of stabilisation was fully gone into by representatives of the Ulster Farmers' Union, the Ulster Agricultural Organisation Society, and bacon-curing interests. Several resolutions were received on the subject, and the Ministry was satisfied that the present system of marketing pork in the absence of regular price quotations by buyers was calculated to create a feeling of uncertainty among pig feeders. It was hoped that advance quotations could be made by buyers, as such might encourage the rearing and fattening of pigs. The fixing of prices at stated intervals was not, however, regarded as practicable, except on a voluntary basis. It was considered that official machinery to that end would be cumbersome and ineffective, for apart from fluctuations resulting from local conditions, consideration would have to be given to world variations in prices, which could not be fore cast with any degree of accuracy. Following the issue of an Order by the Imperial Ministry of Agriculture, prohibiting the importation of animal carcasses from the Continent, much attention was given to the possibility of developing a fresh pork trade with Great Britain. The Ministry offered to give advice, in suitable cases, as to the killing and dressing of pigs, the general requirements of the markets, and the best methods of packing. As already explained, however, increased supplies from the Continent have very seriously depressed prices in England, and have discouraged production in Ireland.

IMPROVED METHODS OF MARKETING.

Although an examination of the Irish co-operative movement has been made elsewhere, brief reference at this point may be made to the proposal to create marketing machinery for the disposal of dairy products on a more satisfactory basis than has obtained in recent years. It is obvious that successful dairying is closely related to the beef cattle industry and also to the swine industry. The objects of the proposed Irish Associated Creameries (I.A.C.) include the elimination of a multiplicity of price quotations, leading to under-selling. Those supporting the plan believe that organised sale of the produce of Irish creameries by an organisation specialising in salesmanship, and thoroughly cognisant of all factors influencing the markets, will be the most effective means of securing the desired results. An effort will be made to improve conditions of transit, and to arrange for a regular flow of definite quantities of butter in certain directions, and at fixed times. Under the scheme it will be essential to provide proper cooling facilities for butter and cream, but these facilities cannot economically be provided unless the traffic is organised and directed by a central body. It is hoped that with proper organisation Irish butter will arrive, during the warm weather, on the English

market in a much more attractive condition than has hitherto been the case. The organisation of this traffic would also result in economies in freight and insurance. It is argued that, while butter should be placed on the British market in the freshest possible condition, a severe slump in prices would make it advisable to regulate supplies by placing a portion in cold storage. A central organisation would be in a much better position to deal with this problem than individual creameries.

It is maintained that the I.A.C. would also be able to carry out many other policies which would be of great advantage for the efficient merchandising of butter, and which, under present conditions, are practically impossible for the individual creameries. For example, it could advertise, or co-operate with the Government in advertising, Irish produce, and devise other ways of increasing profitable sales. It would be in a position to consult with distributors in Great Britain, and arrive at an understanding as to their requirements. Acting in co-operation with the Government, the I.A.C. would, with comparatively slight expense, be able to ascertain the quality of butter supplied by each constituent creamery and could thus meet the requirements of particular customers, as well as improve the product. The advantages of the plan may be summed up briefly as follows:

- (1) The present competition between creameries, which has had injurious results, would entirely disappear.
- (2) The under-selling of one merchant by another handling Irish butter would be largely eliminated.
- (3) Instead of having a large number of agents interested in the buyers on whom they are dependent for orders, there would probably be only one representative at each important industrial centre, thus securing unity of control and a higher standard of selling efficiency at a lower cost.
- (4) The central selling organisation would be in a position to distribute butter in Great Britain in a manner calculated to prevent an oversupply at any particular centre.
- (5) Indiscriminate consigning, which has done great injury in the past, would disappear.
- (6) It would save most of the expenses now incurred by the creameries in connection with marketing. This saving could be used to pay the creameries' shares in the new organisation.
- (7) It would become practicable to arrange for the cooling of butter in transit by the carrying companies.

It is not necessary to present more than the above outline of this proposed marketing organisation. This scheme, however, sharply directs attention to the fact that leaders in the Irish agricultural movement consider marketing no less important than production.

CHAPTER X.

THE BRITISH BACON AND PORK INDUSTRY.

Since the close of the War, serious attention has been given to the production, processing and marketing of pigs and their products in England. The Ministry of Agriculture and Fisheries, the National Farmers' Union (N.F.U.), and many breeding societies, as well as curers and dealers, have grappled more or less successfully with these problems. The Ministry of Agriculture and Fisheries issued, in 1926, a comprehensive Report on Marketing of Pigs in England and Wales, and in the same year the N.F.U. issued its Report on the Co-operative Bacon Factory Industry. From these reports, as well as from a wealth of material drawn from other sources, combined with interviews with government officials, leading producers, curers, dealers and other experts connected with the British pig industry, an effort was made to analyse the present situation in the English bacon and pork market with a view to discovering opportunities, under the right conditions, for the expansion of the Canadian packing industry in that immensely rich and profitable market.

It is recognised in England that while quality alone does not guarantee a profitable sale, nevertheless quality and standardisation are vital factors in making for ultimate success in swine production. Domestic production in England, at the present time, is in many ways out of harmony with the demands of the market. As population has increased the demand for pork and bacon has correspondingly increased, yet the number of pigs in the country remains much as it was some fifty years ago. During this period the number of pigs in Holland has doubled, while in Denmark the increase has been fivefold. As a result of the recent embargo on the importation of fresh pork from the Continent, new opportunities have opened up for the marketing of the domestic product. As will be seen, this profitable outlet for British fresh pork has had serious effects on the operation of the bacon factories. It should be added that the demand for fresh pork has always been met largely from domestic production; and that while the *per capita* demand is somewhat inelastic, varying little from year to year, an increased demand has followed the growth of population and rising living standards. In the opinion of some observers, it will be in the direction of meeting the requirements of the bacon industry that English farmers will find a market for surplus supplies once the requirements of the fresh pork trade have been met. In the past, however, the English bacon industry has been unable to respond to the increased pressure of market demand. The cutting off of supplies of fresh pork from the Continent has, for the time being, dealt that industry a heavy blow, for it has not only lost raw materials hitherto imported, but a considerable part of its former supply of domestic pigs. Consequently, it is obvious

that the English bacon industry will regain lost ground only as the outcome of a carefully planned policy, in the carrying out of which curers and producers work together for their mutual benefit.

Before the War, the domestic production of Great Britain and Ireland comprised somewhat more than half the available supplies of pig meats. With the depletion of the pig herds during the period of hostilities, however, the proportion fell to less than 30 per cent. by 1918. Progress has been made in recovering lost ground, but the pre-war standard of production has not as yet been regained. If Great Britain only is considered, it will be found that it produced only 22 per cent. of the available supplies in 1918. Under what may be considered normal conditions that country appears to produce about 40 per cent. of its total annual supplies.

Supplies from all sources have more than kept pace with the increase of population, but consumption has increased from about 35 lbs. of pig meats *per capita* annually before the war to approximately 44 lbs. at the present time. On the other hand, according to the Ministry of Agriculture's report on Trade in Refrigerated Beef, Mutton and Lamb, it is estimated that the *per capita* consumption of beef, veal, mutton and lamb has declined in recent years. The following table presents the figures on the estimated supplies of pig meat in Great Britain, 1909-1924:

Calendar Year	Home Produce (Tho usands of)	Net Imports	Total Supplies (Tons)	Proportion of Home to Total
				Per Cent.
1909.....	276	337	613	44.8
1910.....	231	296	527	43.9
1911.....	281	352	633	44.4
1912.....	310	348	658	47.1
1913.....	242	344	587	40.1
1914.....	248	375	623	39.8
1915.....	270	436	706	38.3
1916.....	256	491	747	34.3
1917.....	211	426	637	33.2
1918.....	173	613	786	22.0
1919.....	161	400	561	28.7
1920.....	180	318	499	36.2
1921.....	250	350	600	41.7
1922.....	249	409	658	37.9
1923.....	252	530	783	32.2
1924.....	353	502	855	41.3

In the above table it should be understood that "Home Produce" includes Irish stores, and that "Net Imports" include Irish fat pigs. (Figures from Economic Series, No. 12, p. 98.)

The following data (from the same source, p. 97) present interesting and important facts bearing upon the estimated production of pig meat in Great Britain and Ireland, together with the net imports for the years 1909-1924, and *per capita* consumption:

ESTIMATED HOME PRODUCTION OF PIG MEAT IN GREAT BRITAIN AND IRELAND, TOGETHER WITH THE NET IMPORTS FOR THE YEARS 1909-1924, AND PER CAPITA CONSUMPTION.

Calendar Year	Home Production	Net Imports Thousands of Tons						Total Supplies	Proportion of Home to Total Supplies Per Cent. 000's	Human Population	Consumption of All Pig Meat Per Head Lbs.	Consumption of Home Produce Per Head Lbs.	Ratio of Supplies to Population
		Pork			Other Descriptions								
		Bacon	Hams	Fresh									
1909.....	401	222	54	21	1	12	....	310	711	56.4	44,418	35.9	20.2
1910.....	373	184	34	21	3	11	....	253	626	59.6	44,915	31.2	18.6
1911.....	417	231	46	20	3	11	....	311	728	57.3	45,259	36.0	20.6
1912.....	425	220	43	15	1	10	....	289	714	59.5	45,508	35.1	20.9
1913.....	364	231	41	24	1	12	....	309	673	54.1	45,713	33.0	17.8
1914.....	373	246	41	42	1	13	....	343	716	52.1	46,089	34.8	18.1
1915.....	397	312	71	7	5	5	....	402	799	49.7	44,467	40.2	20.2
1916.....	370	362	74	....	15	2	....	453	823	45.0	43,662	42.2	19.0
1917.....	306	326	59	....	8	1	....	394	700	43.7	42,901	36.6	16.9
1918.....	255	519	77	....	5	1	....	602	857	29.8	42,686	45.0	13.4
1919.....	244	361	90	....	7	1	....	459	703	34.7	46,082	34.2	11.9
1920.....	275	269	13	2	22	1	1	308	583	47.2	46,869	27.9	13.1
1921.....	356	257	55	15	14	1	3	345	701	50.8	47,262	33.2	16.9
1922.....	380	295	69	23	10	4	4	405	785	48.4	47,506	37.0	17.9
1923.....	376	370	84	19	19	3	8	503	879	42.8	47,747	41.2	17.6
1924.....	448	360	78	28	10	2	11	489	937	47.8	48,068	43.7	20.9
1925.....	....	347	74	42	11	2	....	476	....	....	....	....	....

DEVELOPMENT OF THE BRITISH IMPORT TRADE.

It was as the result of changes occurring over many years that Great Britain developed the import trade in bacon and other pig products. In 1840, the exports of bacon, hams and pork far exceeded the imports of these commodities. In those early years bacon and hams were bought in Germany, and all the pork was salted. Imports of bacon and hams steadily increased, with the exception of the period 1864-70, the increase being somewhat irregular in the early years of the present century, but marked and consistent in the period immediately preceding the War.

In 1846, the United States entered the British market with pig products, and made great headway in the following year, owing to the failure of the potato crop in Ireland. The United States was quick to take advantage of what were expected to be temporary conditions, and forwarded increasingly large supplies of bacon and hams to the English market. As a consequence, the United Kingdom, faced with this competition, soon ceased to export these commodities and found itself instead on an import basis. As has been made clear by many authorities, the underlying cause for the altered trade relations was not due to the Irish famine but to the industrialisation of Great Britain. The urban communities found in cheap imported bacon an essential food product within the limits of their buying power. The United States, owing to its relatively cheap production costs, was able to enter and hold the British market, as the following figures (Ministry of Agriculture Report, No. 12, p. 3) show:

BACON AND HAM IMPORTS, 1854-1880.

Year	Total Imports	Proportion Received from the United States	
		Cwt.	Per cent.
1854.....	410,703		90.0
1864.....	1,069,390		84.5
1870.....	567,164		61.5
1874.....	2,542,095		82.5
1880.....	5,334,648		92.2

In the decade 1860-70, bacon and hams began to be imported from Canada and Denmark, and somewhat later from Sweden and Russia. Gradually, these new sources of supply cut into the United States trade with the United Kingdom. In 1890, of 5,000,016 cwt. imported, the United States furnished 80.6 per cent., but by 1913 out of 5,712,885 cwt. imported, that country provided only 44.9 per cent. The growth of population in the United States, and the development of the packing industry on a comprehensive scale, were factors affecting the American export trade; for, on the one hand, the home market became of relatively greater importance, and on the other, the exportation of pig meat in the form of bacon and hams became less profitable. The Canadian product somewhat resembled the American, which may

account in part for the fact that until the War Canada had not been able to secure a firm hold on the British market. American bacon retained its hold on the north of England until the past few years, while the Danish product has found its chief outlets in London and the south. Only to a slight extent has Danish bacon displaced the American, for this high quality, mild-cured and lean bacon has, in large measure, created its own market. Sweden and Russia, owing to lack of uniformity in the product and the nature of the cure, made slow progress. The following table throws light on the progress made by these respective countries during the period 1890-1913:

PROPORTION OF BACON AND HAMS RECEIVED FROM:

Year	Denmark Per cent.	Canada Per cent.	Russia Per cent.	Sweden Per cent.
1900.....	19.7	13.1	0.1	0.2
1910.....	39.3	9.8	3.0	0.5
1913.....	40.9	5.9	3.7	0.1

Imports of pork, fresh, salted and refrigerated, expanded rapidly between the years 1840-1913. In the early years salt pork was chiefly imported, coming first from Germany and a little later from the United States. By 1854, the imports from the United States exceeded those of all other countries combined, and by 1880 three-fourths of all importations of pork came from that country. The increase in the domestic demand reduced American exports of salt pork from that year onward. Also, the introduction of cold-storage led to a temporary expansion of the trade in refrigerated pork, Denmark making good the shortage in United States supplies. In 1880, of 384,211 cwt. of salt pork imported, the United States furnished 88.1 per cent., and Denmark only 3.3 per cent.; but in 1913, of 240,597 cwt. imported, the United States provided only 17.6 per cent., and Denmark 77.9 per cent.

Fresh pork first came into the British market from Belgium and Holland, but the latter country gradually secured, along with the United States, the larger part of this trade. Beginning with 1885, Holland supplied the greater part of fresh pork imports, forwarding consignments varying from 200,000 to 500,000 cwt., annually, until 1914. The United States shipped heavy supplies of refrigerated pork between the years 1895-1908, but from 1909 up to the outbreak of war, the United States placed in the British market only small supplies of fresh (refrigerated) pork. The following figures, drawn from the same source as above, disclose the situation:

IMPORTS OF PORK (FRESH, CHILLED AND REFRIGERATED).

Year	Total Imports	Proportions Received From:	
		United States	Holland
	Cwt.	Per cent.	Per cent.
1880.....	25,056	58.7	.....
1890.....	45,249	.....	57.5
1900.....	695,395	34.2	56.0
1910.....	479,907	0.2	76.3
1913.....	494,264	2.4	93.0

THE POST-WAR IMPORTS—BACON, HAMS AND PORK.

The total importations of pig meat during 1925 amounted to over ten million hundredweight. When sufficient time had elapsed to eliminate disturbing factors, the trade finally adjusted itself largely along the lines obtaining before the War. Imports of bacon alone accounted for three-quarters of the 1925 imports of pig meat. During the period of hostilities Danish supplies had greatly decreased, and had, moreover, been largely directed to Germany. With the return of more normal trading conditions, Denmark, with startling rapidity, recaptured the market hitherto almost monopolised by supplies from Canada and the United States. Canada was unable to continue exports on the war level, but from 1923 to 1925 made a fairly good recovery. Sweden, Russia, the Baltic States and Poland, as has already been explained, have also made strenuous efforts in the last two or three years to secure an entry to the British market. Leaving for the moment imports from the Irish Free State out of consideration, it will be found (Economic Series, No. 12, p. 7) that the proportions of bacon supplied by the principal exporting nations during the period 1920–1925 were as follows:

Year	Total Imports of Bacon	United States	Denmark	Canada	Sweden
			Per cent.	Per cent.	Per cent.
1920.....	5,611,630	59.9	12.7	26.6	0.8
1921.....	5,677,588	44.2	32.6	14.9	2.7
1922.....	5,932,152	41.5	39.8	12.4	2.2
1923.....	7,484,881	37.8	47.2	11.1	3.0
1924.....	7,277,968	25.2	54.8	16.4	2.4
1925.....	7,025,072	21.2	53.2	18.0	.....

Since April 1, 1923, imports from the Irish Free State have been separately returned. When these are taken into consideration, the proportions of bacon received by Great Britain for the years 1924–1925 are found to be as follows:

Year	Total Imports of Bacon	United States	Denmark	Canada	Irish Free State
	Cwt.	Per cent.	Per cent.	Per cent.	Per cent.
1924.....	7,878,377	23.3	50.7	15.1	7.6
1925.....	7,486,620	19.9	50.0	16.9	6.2

In 1925 the United States had no serious competitor in the ham trade, supplying 86 per cent. of the total ham imports, amounting to 1,500,000 cwt. Canada, however, has been gradually increasing its shipments of this commodity, and has made an enviable reputation for its product.

The 1926 embargo, placed on shipments of fresh and refrigerated pork carcasses, or parts of pork carcasses, from the Continent, as a preventive measure against the introduction of foot and mouth disease, has, as might be expected, fundamentally affected both the fresh pork and bacon trades. Before the War, Great Britain received over 90 per cent. of its imports of fresh pork from Holland. The trade in fresh pork increased considerably after the War, due chiefly to the expansion of imports from that country. The exports of fresh pork from the Irish Free State went principally to Northern Ireland to be converted into bacon. France and Belgium have, from time to time, exported considerable quantities of fresh pork to the British market. In 1925, the total supplies of Continental fresh pork received in Great Britain amounted to about 820,000 cwt., or about one-fifth of the total estimated consumption for that year. Producers in the Irish Free State and Great Britain should have no difficulty in replacing former Continental supplies. The trade in frozen pork remains the virtual monopoly of the United States, although Canada, the Argentine, New Zealand and Brazil remain potential sources of supply.

Denmark and the United States furnish approximately equal amounts of salt pork products; but compared with pre-war figures such imports are relatively insignificant, the Danish exports falling from 183,415 cwt., as the average for the 1909-1913 period, to 18,461 in 1924. Other descriptions of pig meat, including hearts, livers, kidneys, etc., were imported in only small volume before the War. There was a remarkable development of this trade, beginning with 1920. The quantity imported in 1924 was ten times the amount imported in 1920. Following the embargo, supplies of offals from the Continent were cut off, the field remaining open to the Irish Free State, the United States and Canada. The imports of lard by 1924 showed an increase over the average for the period 1909-13 of 41 per cent., but during the interval the imports from the United States fell from 94 to 80 per cent., the deficit being made good by supplies secured from Canada, the Netherlands and the Irish Free State in the proportions of 11, 6 and 2 per cent., respectively.

TREND OF DEVELOPMENT IN THE PIG PRODUCTS TRADE.

Since bacon is one of the staple articles in the diet of the British people, and since imports in recent years have been so heavy, especially from foreign countries, there is good ground for believing that Canadian producers, under the right conditions, should be able greatly to enlarge their share of the total import trade. According to the estimates of the Imperial Economic Committee, in their report on marketing and preparing for the market foodstuffs produced in the overseas parts of the Empire (Cmd. 2499, p. 21), in the year 1924, the United Kingdom (including Northern Ireland, but excluding the Irish Free State) spent £105,447,000 on imported meats of all classes, and of this sum no less than £50,848,000, or 48 per cent., went to purchase pig products. Out of the huge sum spent on pig products, £40,120,000 went to foreign countries. As has already been indicated, the bulk of the expenditure was for bacon and hams, although there was a considerable importation of fresh pork, 279,000 cwts. being secured from the Irish Free State and 534,000 cwts. from the Continent. The following table indicates the progress made by the chief exporting countries, with the exception of the Irish Free State for which separate figures are not available for the earlier years:

TREND OF DEVELOPMENT—ANNUAL AVERAGE IMPORTS IN 1909–13
BEING TAKEN AS A BASIS.

Country of Production	1909–13 Annual Average	1922	1923	1924
	Per cent.	Per cent.	Per cent.	Per cent.
Canada	100.0	172.3	195.9	276.0
Denmark	100.0	113.7	169.9	191.4
United States	100.0	145.3	172.8	127.1
Other countries	100.0	121.5	94.3	89.2
Total	100.0	134.4	164.6	162.5

The proportion of imports from the several external sources of supply has already been presented, showing that Canada, on the whole, has had a good record since 1913. As has been pointed out by British importers, the bacon market of the United Kingdom demands, on the whole, a high standard of excellence. The demand is principally for bacon in the form of whole Wiltshire sides. The Imperial Economic Committee has also gone thoroughly into the question with a view to stimulating this trade and other trades within the Empire. The committee emphasises the requirements of the trade with respect to Wiltshire sides, and the conditions that must be met with respect to conformation, thickness of fat, and cure. Although there is a market for many different weights and qualities, the great bulk of the demand is for sides weighing from 55 to 70 lbs.; but most favour is shown for a 60-lb. side, the product of a pig of 200 lbs. live weight. Con-

sumer demand is heaviest for a bacon that is not too fat—that is, for sides carrying $1\frac{1}{2}$ in. to $1\frac{3}{4}$ in. of fat evenly distributed along the back. Wiltshire sides are graded according to these specifications for weight, conformation and thickness of fat, and the mildness of the cure. Although the grades may differ in name, according to the country of origin, nevertheless they are all established on the same basis, and are well understood by the trade. Since it is the custom of retailers in England to purchase the whole side, which is then cut up and distributed to customers, they are naturally anxious to secure Wiltshires with a long middle and a thick streak, thus obtaining the maximum weight in the most valuable part of the carcass. To meet these requirements, it is necessary to produce the "bacon" type of pig, which in weight, finish, and conformation or shape, will satisfy the fastidious demands of English consumers.

In reviewing the sources of supply, the Imperial Economic Committee was impressed by the steadily increasing quantities of bacon and other pig products received from Denmark. In 1914, 2,715,000 cwts. of bacon were imported from that country, comprising the largest volume of the commodity that had, up to that time, been received from that source. The period of the War, with the practical cessation of Danish supplies in 1918-19, has already been passed in review. When shipments were resumed in 1920, the United Kingdom received 704,000 cwts.; and by 1924, they reached 3,978,000 cwts., or nearly 50 per cent. more than the previous record of 1914. The committee points out, as has already been shown in considerable detail, that the byproducts of the Danish dairy industry with other home-grown feeding-stuffs, supplemented by imports of small grains, furnish a satisfactory ration for bacon pig production. Highly developed agricultural production, together with the scientific application of the principles of co-operation, makes possible a uniformly high standard of product. It is easier to specialise on bacon production in a country of the small area of Denmark; and it is also a simpler problem to specialise on the various processes of manufacturing and selling. Proximity to the British market is a vital factor in Danish success, as such proximity makes possible a mild cure, rapid transit to consuming centres, and a more regular distribution of the product.

These favourable factors have resulted in forcing the United States to accept the second position with respect to British importations of pig products, although in the post-war period, and up to 1924, that country occupied first place. As has been noted, shipments from the United States reached the peak with 10,064,000 cwts. in 1918. In 1924, they amounted to only 3,310,000 cwts., a figure which, nevertheless, was still in excess of average pre-war shipments. Moreover, while Denmark has concentrated upon the trade in whole Wiltshire sides, the United States forwards a cheaper product—Cumberland cut, picnic hams, hams and cut meats. These exports are not important to the United States from the standpoint of volume and value, but they are very important as a means of clearing the domestic market of surplus supplies, and thus maintaining greater steadiness of prices. It may be added that bacon from Sweden and the Netherlands, while

making only a slight impression on the total volume of trade, and while more irregular in delivery than the Danish, competes with the latter product, chiefly, in the higher-price market.

As has been observed, imports of this class of meat come, within the Empire, chiefly from the Irish Free State and Canada. The Irish product caters to a high-price market, owing to the special demand created by its special cure and flavour. In 1924 supplies from this source amounted to 595,000 cwts., or 6½ per cent. of the total imports. Irish production fell off from that point, many of the farmers being convinced that there was a world surplus of bacon. The efforts of Poland, the Baltic States and Russia to enter the British market in volume lend some colour to that opinion, for recent years. In any event, the farmers of the Irish Free State reduced their breeding stocks, with the result that they were not in a position to take full advantage of the better prices prevailing in 1925. It has already been recounted that the Irish Free State has taken measures to secure greater uniformity in the weight and finish of pigs, and to turn out a more uniformly graded product. Closer attention to grading, and payment to the farmers on that basis, will tend to encourage a wider use of the pure-bred boars now available in the Irish Free State as the result of the various plans for the improvement of livestock. Owing to the undoubted popularity of the Irish product with the British consumer, the Imperial Economic Committee emphasised the importance of making pig raising in Ireland more profitable. In its opinion, there is need for improving the quality of the animals, and of introducing more economical feeding methods. The committee also drew attention to the need of investigating the high transport charges between Ireland and Great Britain, the Danish producers securing much lower rates. The committee reported that the cost of importing bacon from Tralee to Manchester was 72s. 4d. per ton, for large consignments, as compared with 57s. 6d. per ton from Denmark to Manchester, *via* Eshjerg and Grimsby, although some of the shipping lines were beginning to make concessions to the Irish producer. This matter of Danish shipping rates is of great consequence, also, to the Canadian producers, in view of the relatively large part that transportation rates play in the cost of placing the Canadian product in the British market.

CANADIAN SUPPLIES IN THE BRITISH MARKET.

Bacon and hams comprise the chief contribution that Canada makes to the meat supply of Great Britain. While, as has been mentioned, the volume of this trade is still far below that of Denmark, yet Canada's exports, both absolutely and relatively, have greatly expanded since 1913. Fluctuations in the Canadian trade have, from time to time, occurred, and must continue to do so in some measure, owing to the proximity of the country to the United States. But this is true also of the exports of other countries entering the British market. From figures already presented it will be seen, for example, that taking the annual average of the period 1909-1913 as a basis, and making that average equal 100, Canadian exports of bacon reached 276 per cent. in 1924. In the first six months of 1925, the total British

imports of bacon and hams were 3.5 per cent. more than for the corresponding months of 1924; and during that period imports from the Irish Free State decreased by 26 per cent., from the United States by 16 per cent., from Denmark by 2 per cent., while those from Canada were 26 per cent. higher. True, these changes do not disclose "representative" conditions, but they do demonstrate that Canada should not be subjected to undue criticism for failure to deliver regular supplies, when countries more favoured with respect to proximity to market also fall short in this regard.

What is of perhaps even greater importance is the steady and, indeed, remarkable improvement in the quality and price of the Canadian product. The Imperial Economic Committee prepared figures showing this improvement of price as compared with the values of other varieties, basing its figures on the customs return of the United Kingdom (Cmd. 2499, p. 25). It should be pointed out that these returns are based upon values given by importers, and do not necessarily indicate prevailing market prices. The figures suffice, however, to indicate the general situation, and the progress that has been made:

COMPARISON OF LANDED VALUES OF BACON FROM CHIEF SOURCES OF SUPPLY.

Bacon From:	1909-13 Average	1922	1923	1924	1925 (Half Year)
	Cwt. £	Cwt. £	Cwt. £	Cwt. £	Cwt. £
Irish Free State .....	.....	.....	£5.39	£5.30	£6.09
Denmark	3.42	7.05	5.56	5.10	5.61
Canada	3.11	5.86	4.61	4.65	4.94
United States	3.01	4.95	4.07	3.91	4.62

The Irish figures for 1923 are based upon April-December importations. The strike during the summer months of that year kept Irish supplies off the British market, and thus affected the average value of the Irish product for that year. In general, as the figures disclose, bacon from Ireland normally fetches a higher price than the imported product of other countries. The spread between Canadian and American bacon has steadily moved in favour of the former product. The figures showing the trend of competitive prices as between Danish and Canadian bacon disclose even more astonishing improvement of the price position of the latter. In 1921, Danish bacon realised 3s. 8d. per cwt. more than Canadian; in 1922, 2s. 8d. per cwt. more; in 1923, 1s. 0d. per cwt. more; and in 1924, only 9s. 11d. more. In 1925, there was a slight change in this tendency, but more recently there have been periods when the best Canadian bacon fetched even higher prices than the Danish on the London market.

Powerful factors have been at work forcing a continual narrowing of the spread as between the prices of Danish and Canadian bacon. During the War the Canadian trade unfortunately suffered heavy

handicaps. Danish bacon for a considerable period was diverted by war conditions from the British market, and the United States and Canada were asked to make good the deficit. Canadian exports reached the peak in 1919 with a volume of 2,169,000 cwts. Doubtless conditions of production in Canada during the war period were not of the best. It was vital to maintain high volume, and quality suffered. During the War, and particularly during the last two years of post-war control (1919 and 1920), the Canadian trade was severely penalised. The great accumulation of American and Canadian bacon in England, which was allowed to become stale, gave these products a bad reputation. It is difficult to overcome such a reputation, but slowly and surely Canadian producers, for the most part, have moved their product into the quality groups. It was comparatively easy for Denmark, outside the actual zone of war, to place supplies on the market in 1920, which quickly found favour with the retail trade.

The remarkable progress that has been made in placing a quality product on the British market has been due to the combined efforts of Canadian farmers, packers and the Government. There has been a considerable improvement of the type of pig produced, a greater uniformity of the finished article, a milder cure, and a more rapid distribution of the bacon which now reaches consumers in a fresher condition. Since Canadian bacon has gone forward principally in the form of whole Wiltshire sides, it now competes for this, as well as other reasons, with Danish products rather than those of the United States. Denmark, however, can market its pig products within two weeks, and even less, from the time of slaughtering, while from Eastern Canada it has normally taken four, and from Western Canada five weeks to place the product on the British market. The Canadian product must be fresh, have a mild cure, and be rapidly marketed to compete effectively with the Danish. The results achieved by some of the Canadian packers demonstrate that bacon of exceptional quality can be placed among the retail trade of England, but further research must be directed along this line.

Rapid transport and the provision of a regular shipping service, along with other factors, are essentials in placing the Canadian trade in a position to compete with European producers, and more particularly Denmark. If possible, vessels from Canada should make deliveries at the most suitable British ports on the same day each week. Along with this, there should be combined a programme of research in improved methods of curing which will enhance the keeping qualities of the product, and still give the British consumer the mildness of cure he demands. As pointed out by the Imperial Economic Committee, this would not only help the Canadian trade, but would open up new possibilities in the bacon trade in the more distant parts of the Empire, such as New Zealand and Australia.

MARKING THE ORIGIN OF IMPORTED MEAT.

The importance of identifying with marks of origin imported or home-produced meat, or both, was recognised in the Linlithgow Report on "Distribution and Prices of Agricultural Produce." Under the

Sale of Food Order, 1921, imported meats cannot be exposed for retail sale unless the word "Imported," or words disclosing the country of origin, are shown by label. Exception was allowed where a notice was exhibited in a conspicuous position in the shop indicating that only imported meats were on sale. The Report of the Royal Commission on Food Prices demonstrated that the Order was effective in only some parts of the country. In the large consuming centres, which depended necessarily on large imported supplies, the Order was not seriously complied with. Moreover, the Order made no distinction between "Foreign" and "Empire" imported supplies, a distinction which, in the opinion of the Imperial Economic Committee, ought fairly to be required.

Under *The Merchandise Marks Act*, 1926, it is important to note that section 1 makes it illegal to sell imported goods in the United Kingdom bearing the name of a British manufacturer or trader, or the name of any place or district in the United Kingdom, unless accompanied by an indication of origin. This provision was to have effect six months after the passing of the Act. Section 2 gives power to require an indication of origin in the case of imported goods. Applications for an indication of origin to be required in respect to goods of any class or description must substantially represent "the interests of either manufacturers, producers, dealers, traders, users, or consumers, or any body of wage-earners." On a reference from the appropriate department an enquiry will be held into such an application by a committee appointed for the purposes of the Act. When the Committee has reported, the department may make a representation that it is desirable that an order should be made under the section, and His Majesty in Council may thereupon make an Order prohibiting the sale, or exposure for sale, in the United Kingdom of imported goods of that class or description unless they bear an indication of origin. The committee may report that it is desirable that the goods should bear an indication of origin at the time of importation, and if an Order is made making such provision, then the importation of such goods will be prohibited unless they bear an indication of origin. If the committee reports that such goods should bear an indication of origin, the form of the indication and the manner of its application must be recommended. Before proceedings are taken on a report a copy must be laid before each House of Parliament, and notice of the making of the report must be published in the *Gazette*, "and in such other manner as the department may deem suitable."

An Order in Council must specify (a) the manner in which the indication of origin is to be applied; (b) the date on which the Order is to come into force; and (c) whether the goods are to bear an indication of origin at the time of importation, or of exposure for sale at wholesale. Section 4 requires two or more standing committees to be set up to carry out the purposes of the Act, of which at least one shall deal with enquiries relating to agricultural and horticultural produce. Section 8 makes it an offence to remove, alter or obliterate an indication of origin from imported goods, and section 9 relates to the execution of the Act by local authorities. In the case of agricultural produce

the "appropriate department" is the Minister of Agriculture, the Home Secretary and the Secretary for Scotland, acting jointly.

The National Farmers' Union has naturally given careful consideration to the Act, and was highly gratified with the assertion of the Prime Minister that the legislation was intended to require all imported agricultural products to be labelled with the country of origin. It would have required a radical simplification of the machinery of the measure to implement that intention, and it passed into law without effecting that purpose. As has been explained, the new Act does not require the specific marketing of commodities, but provides the machinery to secure that result after careful enquiry. Only after the several steps mentioned have been taken is it possible to mark any particular item of imported agricultural produce as foreign, and to see that it is capable of being identified as foreign when exposed for sale by retailers.

GENERAL CONCLUSIONS ON CANADIAN BACON SHIPMENTS.

The general situation with respect to Canadian bacon in the British market may be summed up briefly as follows: The quality and type of Wiltshire side has been so improved in recent years that it has brought at times even higher prices than the Danish product. It has also replaced Danish bacon in some quarters of the best trade. The best Canadian bacon is quite the equal of the Danish in:

- (1) Mildness of cure.
- (2) Type of side desired by retailer.
- (3) Colour.
- (4) Trimming.

On the other hand, the Canadian bacon as a whole has not attained the Danish standard. The cure is too hard (salty), the side too short and thick, and there is an undue proportion of fat to lean. In addition there is too great a percentage of weight in the cheaper cuts—the shoulder and jowl. It follows that there is too small a percentage of weight in the profitable cuts, that is, in the middle or back and streak. The splendid increase in volume of the past decade does not as yet assure the necessary regularity of delivery required by dealers, and places the Canadian product at a disadvantage in comparison with the Danish. Since volume is a marketing necessity, every effort should be made to secure it by placing the export trade in bacon on a profitable basis. Moreover, with the abolition of preservatives in imported bacon, beginning July 1, 1927, it has become essential to move Canadian bacon into consumption as rapidly as possible. Quality, uniformity of product, volume, and regularity of delivery thus become vital factors in success. It is imperative to conduct a systematic advertising campaign in Great Britain to push the sale of Canadian bacon and other products. The Empire Marketing Board is undertaking work, in this connection, of the first importance, to which detailed reference will be made later. Canada should rely, however, mainly on its own efforts

to promote Canadian trade. It is gratifying to note that the Government at the last session of Parliament took steps to organise a comprehensive campaign in Great Britain to achieve that object.

REQUIREMENTS OF RETAIL TRADE.

The requirements of the packer are determined largely by the demands of consumers with respect to the type and quality of product desired. From the standpoint of the British retail trade a clear and careful analysis of the problem has been recently made by Prof. H. R. Davidson, School of Agriculture, Cambridge, and Mr. J. Andreasen, manager of the St. Edmundsbury Co-operative Bacon Factory (Journal of the Ministry of Agriculture, March, 1927). They show that the demands of the consumer must be the standard by which the producer is controlled. It is obvious that in buying sides of bacon the retailer must be guided in his choice by the requirements of his customers. The greater part of a side of bacon is used by consumers for the breakfast table, certain small portions being boiled. The cuts of bacon most demanded are those which in frying will not break up or lose their shape too much, and which have a suitable relation of the fat to the lean. To meet consumer requirements, therefore, the side is first usually cut up into three pieces—fore-end, middle and gammon. "Picnic" hams are formed from the shoulder; the term "ham" is used for the hind leg when it is cut off the carcass before curing, and in such cases it is cut into a more oval shape than the gammon, which is removed by a straight cut. The final division produces ten cuts, all differing in conformation and size. Because of these discrepancies, which seriously affect the demand, the retailer naturally places a separate value on each. The cuts are as follows:

- | | |
|--------------------|--------------------|
| (1) Collar. | (6) Forehoek. |
| (2) Rib back. | (7) Thick streaky. |
| (3) Short back. | (8) Thin streaky. |
| (4) Long loin. | (9) Flank. |
| (5) Corner gammon. | (10) Gammon hock. |

The gammon hock is full of lean meat, and so is as suitable for boiling as the corner gammon, but the shank consists almost entirely of bone. It therefore has a lower value than several of the other cuts, pound for pound. The corner gammon, when properly cut, contains only a small piece of the leg bone. Unless cut from a very fat pig it consists almost entirely of lean flesh, and is the choicest part of a boiling ham.

The long loin, while producing good rashers, contains a higher proportion of bone than the other back cuts. The short back, with the corner gammon, brings a higher price than other cuts, as there is very little bone present to reduce the total amount of meat. The rib back is also an excellent cut, but on account of the bone is relegated to the second price position, along with the long loin.

The flank is one of the poorest cuts, for the lean meat does not extend very far into the piece; consequently, the greater part, when sliced gives a very narrow rasher of poor frying qualities. The thin

streaky, along with the thick, is popular on account of the alternate layers of lean and fat; but the thin streaky is liable to suffer somewhat from the same disability as the flank. The thick streaky, provided the belly of the pig is thick, gives rasher, selling at a price only slightly lower than those from the back.



Display of Canadian products at Harrod's, Ltd., London, Eng., during Empire Shopping Week. By permission.

The cuts comprising the fore-end, with the exception of the flank, are the lowest in price. During the curing process the shoulder blade is removed from the side thus creating the collar and making it impossible to cut an unbroken slice. Muscles and gristle also lower the value of the piece. The forehock suffers from these defects also, and in addition from the presence of a part of the leg, with attendant waste.

Professor Davidson and Mr. Andreasen compiled the following data, showing the proportions and values of cuts in a good quality Wiltshire side as demanded by the British retail trade:

Cut	Weight lb.	Per cent. of total weight	Price per lb. s. d.	Value of cut s. d.	Per cent. of total value
Gammon hock	8.7	15.6	1 5 1/4	12 5 1/2	.....
Corner gammon	4.4	7.9	2 5 1/4	10 11	.....
Long loin	3.2	5.7	2 1	6 8	.....
Short back	4.3	7.7	2 5 1/4	10 8	.....
Rib back	8.8	15.8	2 1	18 4	.....
Flank	2.6	4.6	1 0 1/2	2 8	.....
Thin streaky	2.8	5.0	1 7 1/4	4 7	.....
Thick streaky	5.2	9.3	1 10	9 4 1/2	.....
Collar	7.3	13.0	1 2 1/4	9 0	.....
Fore hock	8.6	15.4	0 9 1/4	6 11 1/2	.....
 Gammon	13.1	23.5	1 9 1/2	23 4 1/2	25.5
Middle	26.9	48.1	2 0	52 3 1/2	57.1
Fore-end	15.9	28.4	1 0	15 11 1/2	17.4

As is well known the pig may be butchered, or cut up, in various ways, giving rise to a corresponding number of "cuts." These had their origin, for the most part, in English local custom in the bacon producing districts such as Cumberland, Stafford and Wiltshire; and the result has been that in some cases the name is used in the trade to designate any particular cut, no matter whence the product is derived.

As Mr. George J. Nicholls, a leading member of the London provision trade, has pointed out, while Cumberland and Ayrshire, Wiltshire and Staffordshire still produce much home-cured bacon, by far the larger proportion of these cuts come from the United States under the general name of "box-meats." Such products are usually consigned to Liverpool. London and the South favour the Wiltshire-cut side, but the Midlands and the North prefer pale-dried bacon, either home-cured or imported from the United States, or to a lesser extent, from Canada. Such bacon normally comes from America packed in wooden cases containing 500-560 lbs. net of meat, whatever the cut may be, or whether containing hams. In the past, such bacon was packed in either salt or borax; hence, before being smoked or hung up to dry white, it had to be washed, and then carefully drained. Naturally, in the drying process, the bacon lost considerably in weight, which (as Mr. Nicholls explains in great detail in his admirable and important treatise, *Bacon and Hams*), had important effects on net costs per lb. both to the wholesale and retail trade.

Cumberland-cut sides (Cumberland Middles) consist of the sides of prime pigs with the ham removed. The side is squared at the end, and the fore-leg removed at the knee-joint. The shoulder-ribs, neck-bone and back-bone are also taken out, and the breast-bone is cut down smoothly and evenly with the face of the side. These middles are cured in dry salt, and are graded to average:

20 to 22 lb.	28 to 30 lb.
22 to 24 lb.	30 to 32 lb.
24 to 26 lb.	34 to 36 lb.
26 to 28 lb.	38 to 40 lb.

Long-rib Middles, Dublin Middles, English Short-rib Middles and Long Clear Middles are all more or less similar to Cumberlands. Long-rib Middles are made from lighter sides, and have the blade and leg bones removed, with the fore-leg cut off close to the breast. Dublin Middles are very similar to Cumberlands, but are made from lighter pigs, the leg being cut off close to the breast. Long-rib Middles grade from 16 to 22 lb., and Dublin Middles from 12 to 20 lb. English Short-rib Middles have both ham and shoulder removed, otherwise they are the same as Cumberland-cut side. These grade from 18 to 32 lb. Long Clear Middles, as the name implies, are free of the blade, ribs and leg bones, while the leg is cut off near the breast. They are graded to average 24 to 36 lb.

There are various other cuts into the characteristics of which, for present purposes, it is not necessary to enter. It may be added, however, that the packers in manufacturing this bacon attempt to avoid the slightest waste. All the trimmings are made use of in the packing plant, in some form or other—the production of sausages, lard, etc.

The famous Ayrshire bacon, prepared in Scotland, is manufactured according to a special process. The pig is carefully skinned after the head and feet have been removed. After all the bones have been removed, the carcass is cut into four quarters, and each rolled up. These are then put into a pickle prepared with salt, saltpetre, sugar, and some old pickle that has retained color and flavour. When three or four days have passed the bacon is taken out, partly dried, and then rolled up, and after priming a little longer, is sent out for sale. Such bacon has a very mild cure, and is not intended to be kept for any considerable period.

PRODUCTION AND SALE OF HAMS.

Hams are divided into two main classes: the ham that is manufactured from the hind-leg of the pig, and the "picnic" ham made from the fore-leg, or shoulder, which has found favour with those large classes of the British community seeking a cheaper joint. In normal times, Sweden, Russia, Holland and Denmark concentrate on the production of the Wiltshire side, and therefore do not export the ham cut and cured separately. On the other hand, England, Ireland, the United States and Canada produce in varying degree other cuts of bacon, the ham being a separate product.

England and Ireland are both famous for their hams. Yorkshire, Cumberland, Staffordshire, Wiltshire and Suffolk, in England, manufacture hams of exceptional quality. The York ham, pale-dried, well matured, cured by the dry-salt process, and often sealing up to twenty-five and even thirty pounds, has a well-earned reputation. When it has been kept for many months to mature, a fine "bloom" appears on the under side. Inspection of the plant of Messrs. Marsh and Baxter,

at Brierley Hill, Staffordshire, also disclosed the production of a quite exceptional product. They use the rest of the side to make what is known as the Shoulder Belly, which finds a ready market in the Birmingham district. This is a fine piece of meat, and is manufactured by removing all bones, including the blade bone and ribs, all the lean loin being left on the side.

Irish hams are usually sold smoked, while the English product is often pale-dried only. Irish curers smoke their own hams. In Scotland, as a rule, hams are sold green, or pale-dried. The fatless ham is also favoured in that country. From the United States and Canada, Great Britain has received a wide variety of "cuts" of hams, including the following: Long-cut hams, Short-cut hams, Short-cut fatless hams, English Stafford-cut hams, Manchester-cut hams, and shoulder cuts. The differences between these are to be found chiefly in the trimming and the treatment of the bones. It was the custom to pack these hams in borax, when destined for the English market. All shapes of hams were cured in dry salt, unless delivered on special order, with the exception of Short-cut hams which were cured in sweet pickle.

The United States is the most extensive manufacturer of picnic hams—hams so-called by courtesy. These are merely shoulders so cut and trimmed as to resemble hams, being well rounded, with the leg cut off above the knee joint. They are cured in sweet pickle. Picnic hams have found great popularity in the cheap trade, more particularly in London. They are offered for sale either smoked or green. In addition, there is a considerable trade in Square-cut shoulders, which are cut three ribs deep, with the leg cut off at the knee-joint. These shoulders are cured in dry salt. New York shoulders are cut narrower, the leg being removed above the knee joint. These shoulders are cured in sweet pickle.

It may be added that hams are usually kept in stock for longer periods than bacon, although regular weekly shipments of hams and shoulders are made to the markets of the United Kingdom. Even when properly dried or smoked they lose weight, and it is, therefore, in the interest of the retailer to move them into consumption as quickly as possible.

SELECTION AND GRADING OF BACON.

Among other wholesale warehouses visited in Smithfield was that of Mr. George J. Nicholls, who gave a very complete and careful demonstration of the manner in which bacon is selected and graded for the retail trade. As already explained, Wiltshire-cut sides are in most demand in London and the South, but this type of cut is gaining in popularity in the Midlands and the North also. On the other hand, the demand for other varieties of cuts is steadily, if slowly, increasing in London and district. In fact, there is no fixed, unchangeable demand for a particular cut of bacon in any of the several English markets.

Bacon from the United States arrives on the Smithfield market in boxes only; from Canada, in boxes and bales; from Ireland, Sweden, Holland and Denmark in bales. Boxed bacon has a net weight of from

500 to 525 lbs., the weight of each side varying from 42 to 84 lbs. The number of sides in bales varies from four to six, according to the weight per side. Very heavy sides are packed two or three in a bale.

The term "selection" has to do with the build, or construction, of the side, and has nothing to do with weight or quality. As applied to the Wiltshire-cut side, there are three selections—leanest, lean, and stout, respectively. Whether a side be large or small, it is obvious that it may be so "built" as to contain a large proportion of lean, in which case it is "leanest." With more fat, the selection is "lean"; with little lean, it is "stout."

These are the following classes of weights:

Extra Light sides, less than 42 lbs.

Sixes, from 42 to 48 lbs.

Sizeable, from 50 to 66 lbs.

Medium, from 67 to 84 lbs.

Heavy, from 84 lbs. and upwards.

The next consideration is the quality of the product, which determines the brand. The curer either brands the bacon, or relegates it to an inferior grade. Branded bacon demands the best meat, bearing a good proportion of lean to fat, and of meat to bone. The side must be well shaped, with the fore-end properly related to the side, the gammon shapely and plump, and the entire side free from blemish or disfigurement. The side which will not pass the complete test constitutes the "half-brand," or good. It may have been produced from a well fed pig, but there is some slight defect—deficiency of lean, streak too thin, or the fore-end or shoulder may be out of proportion. Since such a side is not perfectly proportioned it does not receive the full brand.

Sides which do not receive a brand identifying the curer, may be good enough to place in the retail trade to meet the demand for a cheap product. Such sides come from poorly fed pigs, or from pigs that have been bruised or injured during the journey from the farm to the factory. Any damage that affects the symmetry of the side will place the product in the class of "seconds," or unbranded.

When either boxed or baled bacon arrives at the warehouse, and hams for ultimate sale in London or the South, smoking becomes an important part of the process of preparing the product for the retail market. The smoke-house, therefore, is carefully constructed, and is placed under expert management. It is usually built of brick, with a stone or concrete floor, and may rise to a height of sixty feet. It is equipped with bars, pulleys and other devices so that the bacon and hams can be arranged in order, properly smoked and handled. Bacon packed in bales from Canada, Ireland and Denmark, requires no washing. After removing any dust that may appear, it is peamealed and hung in the stove. Boxed bacon, hitherto packed in salt or borax, required washing, before being smoked. The quality of the pea-meal used, and also the way it is applied, are important factors in securing the desired flavour and appearance of the finished product. The selec-

tion of the wood and sawdust is also a matter of extreme importance, both for colour and flavour. Oak is used if a dark colour is desired, or if the weather is very cold. Pine is usually employed in London and the South of England. Usually three days of the smoking treatment are required, and then the bacon and hams are allowed thoroughly to cool before being handled, to preserve the "bloom." Hams from the United States, if smoked, are not subjected to the process of covering with pea-meal before being placed in the smoke-house. As noted elsewhere, English and Irish curers smoke their own hams before forwarding them to wholesale dealers. It may be added that bacon from Canada, the United States, Holland, Denmark, and the Baltic States bears the brands of their respective Governments, certifying to the health of the pigs from which the product is derived. In addition, of course, the bacon may bear the brand of the curer.

CHAPTER X—PART II.

SOME DISTRIBUTION PROBLEMS.

WHOLESALE DISTRIBUTION.

As might be expected, the development of such a vast trade as is conducted in the distribution of bacon and hams in England, has through experience and practice created elaborate machinery for the efficient distribution of these products. Between the primary producer and the retailer are the agents of the curers and packers, and wholesale dealers. The agents sell to the wholesalers; the latter receive the product in bales or boxes, prepare it for sale, and distribute it through the retail trade.

There are four chief wholesale centres in England, with an association in each which regulates and controls the trade. These are as follows:

London: The London Provision Exchange, Ltd. (formerly The Home and Foreign Produce Exchange, Ltd.).

Manchester: The Manchester Wholesale Provision Association, Ltd.

Liverpool: The Liverpool Provision Trade Association, Ltd.

Bristol: The Bristol Provision Trade Association.

The London Provision Exchange conducts its operations at Hibernia Chambers, London Bridge. It is governed by a committee of fourteen members. Its rules have been carefully revised in recent years, in 1914 and again in 1923. The Manchester and Liverpool Associations are similar in nature, being joint stock companies whose members seek to improve conditions of the trade and to operate an exchange. The Bristol Association does not conduct an exchange. In general the functions of these associations are twofold: they attempt to maintain fair trade rules, and to settle any dispute that may arise as between buyer and seller if possible by arbitration.

SALE THROUGH AGENTS AND WHOLESALERS.

As the trade is at present organised, agents constitute one of the most important links in the chain of distribution. They may represent one or several factories. In 1926 there were approximately twelve such agents in London, and fifty in other parts of the country. Commissions average about $1\frac{1}{2}$ per cent. on sales. The agents keep in close touch with the factories, and are notified weekly with respect to available supplies. It is their duty not only to sell the entire weekly output of the factory, but to collect the proceeds of sales. At the instruction of the agent, factories consign the product either direct to the wholesaler, to the warehouse of forwarding agents in London, or to some other receiving port, where the bacon is distributed according to the agent's instructions. The agents, like the wholesalers, have their association to protect their special interests and to regulate the prac-

tices and customs of the trade. The London agents' association includes in its membership agents of the Danish co-operative and non-co-operative factories, and also agents of Irish, Dutch, United States and Canadian factories. British curers are not represented on this association, although many of the largest of them are represented on the Provision Exchanges. The wholesalers include among their number formally organised, not only practically all the important wholesale provision merchants of London and the South of England, but also the representatives of the large multiple shop companies.

Agents and wholesalers trade daily on the exchange, but the principal market days are Mondays, Wednesdays and Fridays. On the last day, particularly, an attempt is made to adjust demand and supply. It is on that day also that the official market report is issued, and this includes the records of prices on Thursday and on Friday up to the time of publication. The essential function of the agent is to regulate the trade in bacon and hams, by attempting to relate the available supply to the effective demand. As the business is organised today this is not only a useful, but a vital, function of distribution. In the import trade in bacon and hams, transactions—with the exception of those conducted by the Danish Bacon and Co-operative Trading Company, Limited—are carried out through the medium of agents and wholesalers. Only members may transact business on the exchange. Agents may sell only to wholesalers and to certain large retailers, while the wholesalers, in turn, must purchase all their supplies from the agents of the factories.

In the report of a committee of investigation appointed by the National Farmers' Union (N.F.U. No. 31, p. 45), the following statement occurs :

"In considering the possibilities of developing the home bacon industry, particularly of organising the sale of the product, it is impossible to ignore the boycott, which can be exercised by the powerful associations of intermediaries dealing in bacon on the London Provision Exchange."

On the other hand, in the final report on meat issued by a sub-committee appointed by the Standing Committee on Trusts, 1921 (Cmd. 1356), the following statement is made:

". . . . As regards the sale of Danish, Irish and Dutch bacon, it is admitted there are in London and the South an association of agents and another of wholesalers working to protect each other's interests by the maintenance of a rule that agents must only sell to wholesalers and certain large retailers, and that wholesalers must buy only through agents. This regulation is enforced by a system of boycott, but we do not find that the result has been to keep prices higher than they otherwise would have been."

The Co-operative Wholesale Society, under the rule referred to above, since it is not a member of the London Provision Exchange, found itself in the position of being unable to handle the output of certain English farmers' factories which was, at the time in question, being marketed through a firm of agents who were members of the exchange. The Co-operative Wholesale Society, because of its purchases of bacon from the Danish Bacon and Co-operative Trading Company,

from its own agents in Denmark, and from other sources outside of the exchange, was debarred from obtaining its requirements in any class of bacon from the organised London provision trade. Although the special report of the N.F.U., referred to above, stigmatises this organisation of agents and wholesalers as constituting a "ring," it may be remarked that as far as investigation of the provision trade in London disclosed, in the time available, the practices and customs of the wholesalers and agents were conducted quite openly, and were open to the investigation of all concerned. As stated above, these sections of the trade perform important functions of a fundamental character. Their facilities are offered on certain terms, with a view to protecting the interests of producers and customers alike. It is admitted that distribution can be effected on a different basis, and one that will probably conflict with the interests of the organised provision trade. In that



Demonstration Car—Used by the Danish Bacon Company in England.

event, it is felt to be quite reasonable to expect the new organisation to provide its own trading facilities, and to incur the expenses resulting therefrom.

THE DANISH BACON AND CO-OPERATIVE TRADING COMPANY.

The organisation and functions of this company have been already outlined, but such observations may be added at this point as will serve to indicate more clearly its relation to the general English trade. It is financed to a considerable extent by the eighteen Danish factories constituting its membership, and functions as a co-operative selling agency. As already noted, it combines the services of agent and wholesaler, and sells direct to the retail trade. It handles about 27 per cent. of the total Danish export to Great Britain, and is thus the largest concern distributing bacon in that country. It does not attempt to hold supplies off the market, not only because bacon is a semi-perishable product, but because it is a vital feature of Danish production to market in volume and in an orderly manner.

It has been said that the company is largely financed by the Danish factories, but shares are also held by retail traders in England who purchase bacon from the company. At their option, distributable profits

may be applied to increasing the number of shares held, thus enlarging their interest in the business. As far as could be learned, prices do not indicate that any saving in middlemen's charges are passed on to the retailer, or the consumer. On the contrary, the articles of association provide that such savings should be returned to the constituent factories, and by them, presumably, to the primary producer. Owing to the enormous quantity of produce it handles, it is maintained, however, that the company sells to the retail trade on a lower price basis than other distributors. Because of reasons already explained, sales to the London wholesale trade are restricted, but the company supplies many wholesalers in the provinces. It is equipped to smoke the bacon before it is distributed to the retail trade. About one-quarter of the company's output is distributed as sides, another quarter as "cuts" for the retail trade, the remainder being sold in original bales. Some of the cheaper cuts are re-exported to France and to middle European markets.

MARKETING OUTPUT OF ENGLISH CO-OPERATIVE BACON FACTORIES.

In the investigation of the committee of the National Farmers' Union into the co-operative bacon factory industry, to which reference has already been made, the three main channels of distribution open to the English co-operative factories are carefully analysed (N.F.U. No. 31, pp. 46-48). These are the following:

- (1) Sale through importing agents.
- (2) Sale through a co-operative selling agency.
- (3) Sale through a factory's own selling organisation to retailers or untied wholesalers.

The committee recognised the efficiency of the machinery which the importing agents have at their command, especially their connections with the London wholesale trade. On the other hand, the Danish Bacon and Co-operative Trading Company, Limited, has achieved a considerable measure of success through establishing a central agency controlled by the producers through their own factories. In this way the company has been able to get direct access to the retail trade, and to such wholesalers as are not tied to the agents by agreements. This has involved the establishment of a wholesale business on a large scale, and the organisation of a sales force to cover different parts of the territory. But the net result has been a considerable saving which is available for distribution between primary producers and retailers who are members of the selling agency.

A number of the English curers have adopted the third method of selling, making sales direct to retailers and untied wholesalers. This method involves considerable expense, for a selling organisation must be built up to compete with the existing wholesale machinery. It is possible to secure good results along these lines provided the product marketed is of high grade. Nevertheless, the securing of direct outlets for supply is a slow and costly process, and there is always the danger that the supply may exceed the demand, in which case the surplus can find a market only through the wholesale trade. Because of the close

relation of costs of production to volume of output, each factory will naturally attempt to produce the maximum supply. Changing the method of marketing in consequence of an increase in production has been, according to the committee, at least a contributory cause of difficulties which have arisen in the English co-operative packing industry. In the case of a factory, where the direct method of sale had met with success, the committee was left with the impression that output had been restricted with a consequent increase of operating costs.

The committee concluded that the ideal method of sale for the English co-operative factories would be found in the establishment of a central agency, provided it received loyal support, and conducted its business along the lines of a large wholesale agency. Two of its chief functions would be to standardise the products of the different factories, and establish the popularity of a brand, or brands, of "English Farmers' Bacon." The committee drew attention to the fact that an effort had already been made in this direction, but that the promised support, in terms of bacon supplies, had not been forthcoming. Moreover, the older societies had not seen their way clear to come in, and as a consequence the venture failed. Its decline, also, had synchronised with that of its member societies.

The committee suggested that if the co-operative factories could not as yet conduct a central selling agency, nevertheless a central agency should be established as a registered trading body, if only for the purpose of supervising the combined sale of the bacon through one of the existing agents. In the opinion of this committee, the particular channel through which sales are made is not as important as combined selling of the products of all factories, with the opportunity thus afforded of offering to the trade large supplies of uniform quality. Only when selling is centralised in this way will the English factories be able to benefit from selling under certified brands or trade marks, or from any measures that may be taken to direct effective demand toward Empire-produced, including home-produced, products. It was also suggested that a central agency working on these restricted lines could be financed by small deductions from the agent's commission charges. It would also be in a position to obtain certain concessions, for member factories, in buying supplies, in securing cheaper insurance rates, and so forth. It would probably, also, under these conditions, be easier to finance factory operations, as well as to dispose of the offals. Because of the conditions mentioned above, it has not been possible for the English Bacon Company, Ltd., to secure the expected results.

ENGLISH CO-OPERATIVE BACON FACTORIES.

The English co-operative bacon factories appear to have been established as a result of the initiative of leading agriculturists in the areas concerned and, in the case of the Kent factory, with the support of county branches of the National Farmers' Union. According to the considered judgment of the committee of enquiry, the support both in capital and pigs rendered by the farmer members at the time of the

foundation of these societies, justified proceeding with these ventures with reasonable prospect of success. The committee further state (N.F.U. No. 31, p. 53) :

"At the same time we must record that the evidence before us suggests that not a few of those farmers who have joined the several societies have done so more with the view to providing themselves with an alternative market for their pigs than with any intention of supporting their own society to the exclusion of other markets."

At the time the investigation referred to was undertaken, there were six such co-operative societies, but this number has since been reduced by the voluntary liquidation of the Four Counties Bacon Factory of Eastleigh. The list of these societies follows:

The Herts. and Beds. Co-operative Bacon Factory, at Hitchin.

The Kent, Surrey and Sussex Farmers' Bacon Factory, at Kidlington, near Oxford.

The Lincolnshire Co-operative Bacon Factory, at Ruskington, near Sleaford.

The St. Edmundsbury Co-operative Bacon Factory at Elmswell, near Bury St. Edmunds.

Of the various co-operative factories it was, unfortunately, not possible to make personal investigations, except at the St. Edmundsbury plant. It is one of the most successful of the co-operative factories, and has established an enviable reputation for its products. While conditions in Canada are radically different from those obtaining in England, nevertheless much can be learned from the somewhat unfortunate experience of English farmers in their co-operative packing ventures. Heavy losses have been sustained by some of the societies, and in the case of others the results have fallen far short of expectations. Consequently, the co-operative movement in this direction, for the time being at least, meets with little or no encouragement in the farming community.

Methods differ from plant to plant, but those followed at the St. Edmundsbury Co-operative Bacon Factory may be briefly outlined. This plant was erected in 1911-12. It had 1,773 members at the end of 1925, and the subscribed capital amounted to £29,953. Despite difficulties that arose at the inception of the undertaking, fairly good profits had been made during the period of about 14 years' operation. The factory is administered by a committee of fifteen, five being elected annually for a three year term. The administrative staff consists of a paid chairman, the manager, the secretary, and an accountant. In addition there is one motor-van driver, two in charge of packing, receiving, weighing and grading pigs, four men on small goods, and twenty factory hands under the direction of the principal foreman. Necessary provision is also made for an engine-room staff, and for office help.

In 1923 the company acquired White House Farm at a cost of approximately £4,000, to carry out a scheme for the experimental breeding and feeding of pigs for bacon; but the enterprise proved too

costly, and it was shortly decided to sell the property. Three retail shops are operated at Yarmouth, Gorleston and Lowestoft, respectively.

The factory, which covers an area of approximately 210ft. by 75ft., was of Danish design, and was planned to take care of 750 to 1,000 pigs weekly. It was, however, extended to provide for a capacity of 1,200 pigs per week, dry cure. Tanks have been provided to deal with 500 pigs per week, but lack of storage accommodation would prevent their being used, except as an alternative to dry curing, if the plant were working to capacity. Land and buildings cost £25,700, and equipment £13,600. A 56 h.p. Atlas (Copenhagen) steam engine, running alternately with a 150 h.p. Vickers Petter oil engine, operates the dynamos (Atlas and Compton, respectively), which supply the motive power of the machinery and the factory lighting. Accumulators are charged for use at night. The chill and curing rooms are cooled by an Atlas (Copenhagen) 16-ton refrigerator, a 60-ton plant by Lightfoot being held in reserve. Water is secured from artesian wells, and there is also a water-softening plant. Sewage is taken care of by septic tank disposal.

The butchering process is highly organised. The curing process, in which the dry cure method is followed, takes approximately ten days, after which the sides are allowed to mature for another eight days. The smoking process, when used, takes from 36 to 48 hours.

The N.F.U. committee investigated in some detail the manner in which prices were determined at the several plants. At the St. Edmundsbury plants prices for pigs were fixed weekly, on Friday, but were subject to variation in market changes before the end of the price week. Members, by circular, are notified that such prices hold good "until further notice." In addition, the factory allows 2s. per animal for carting, and pays charges on minimum shipments of eight pigs sent by rail within a radius of 100 miles. As insurance against condemned carcasses or offals, the company charges 3d. per bacon pig, and 2s. 6d. per sow or boar.

Various changes have occurred in methods of paying for pigs. Up to the first week in December, 1924, a premium at the rate of 6d. per score was paid for Grade A pigs, and thereafter at the rate of 1s. per score, until the third week in March, 1926. Thereafter an intermediate Grade B was introduced, for which 6d. per score was paid. Pigs are graded by the weighing hand, under the direction of the manager, and classified on the Statement of Account as follows:

- (1) Grade A.—Long-lean pigs, good middle, plump ham, small shoulder.
- (2) Grade B.—Thicker in back fat, but otherwise equal to Grade A.
- (3) Lean Pigs.—Long lean pigs, but with thinner flank and streaks.
- (4) Stout Pigs.—Pigs measuring more than two inches back fat.
- (5) Sixes and Porkers.—Underweight pigs.
- (6) Inferior Pigs.—Seedy cut, bruises, flabbiness, thinness.

Payment has been made at the following rates:

Classes (1) and (2) at the respective premiums above stated.

Classes (3) and (4) at the flat rate.

Classes (5) and (6) at slightly less than the flat rates.

It should be noted that all pigs are bought by dead weight. They are weighed while still warm, after the removal of entrails. A section of the bar forms one side of the scales, and the weight is automatically stamped on a ticket. To this is added the number ear-marked on the pig, the particulars being entered in the slaughter book. It is estimated that the average shrinkage from live-weight to dead-weight is about 23 per cent. Pigs weighed alive for re-sale are therefore paid for at 77 per cent. of recorded weight. It should be added that, in weighing the pigs on the rail, a deduction of 5 lb. is made for the gambrel and hooks, and a further deduction of 3 per cent. from warm to cold weight, on which payment is made.

Mr. J. C. Andreasen, manager of this factory, explained that England, not being an exporter of pig products, could not so easily persuade farmers to produce a definite bacon type of pig, as must be done in Denmark and Canada, for the export trade. The old scheme of establishing three grades, as the level or basic price, had to be abandoned, as farmers were not supplying the bacon type pig to any great extent, but chiefly the thick smooth. The farmers threatened to withdraw their support unless a change was made to the straight grade basis, consequently, as in classes (3) and (4) above, a flat rate is paid. In part the change was due to the proximity of private bacon factories, and consequent keen and direct competition. Since this factory has been in operation prices for pigs in the territory tributary to it have risen considerably. No distinction in this respect, of course, can be made between prices paid to members and non-members.

Mention was made at this plant of the serious effects of the embargo on continental shipments of live pigs and other animals, on the British bacon industry. The bacon pig supply, owing to the demands of the fresh pork trade, has been seriously affected. Moreover, considerable difficulties were being experienced in securing supplies of the bacon type pig, owing to the number of breeds in actual use. The British farmer has been found to be a strong individualist and does not always, as his Danish brother usually does, stand steadfastly by his own factory despite the attraction of higher price offers elsewhere.

The manager referred to the fact that although four tanks had been originally installed for the brine cure, they are not used, although this cure adds weight to the product. The dry cure is preferred at St. Edmundsbury because of the marked superiority of the mild product.

It is the custom to accept all pigs sent to the factory; only those animals considered below standard are sorted out by the foreman and sold alive. The factory in recent years has not been operated to capacity, although supplies from members have been fairly satisfactory. It

should be observed that members are under no legal obligation to supply pigs. An attempt is made to book up supplies a week in advance; dealers are not used for this purpose, two canvassers being employed to explain the objects and advantages of the co-operative venture, and to persuade farmers to send in their pigs.

The society has its own selling organisation, its brand of bacon now being firmly established in the trade. It has its own shops for the disposal of manufactured byproducts and offals, but the greater part of the offals is sold in London. All sausages, pies, puddings, etc., are sold ex-factory.

In the beginning, in order to facilitate capitalisation, it was provided that each farmer could purchase up to 200 shares. In the original agreement, moreover, it was provided that farmers had to deliver two pigs for each share held, but the agreement was never enforced. Since the capital originally subscribed was not sufficient to build and operate the plant, the directors gave their personal bond to the bank by way of guarantee of a loan. The society has a considerable reserve established from the surplus profits of good years, but no deductions were made on prices paid to farmers, for this purpose. In addition to income received from the sale of byproducts mentioned above, there is a considerable income from dried blood, pressed and sold as feed, and also from the sale of bone meal.

METHOD OF CURE.

The English co-operative bacon factories have favoured the dry cure, as it is claimed that this cure produces a higher quality of product, with a more delicate flavour, and that the price it fetches more than compensates for the extra cost of manufacture. The tank cure process is quicker and cheaper. It is said that tank cured bacon can be dispatched from the factory in about nine days from the date of killing. On the other hand, the dry cure demands an interval of about twenty-one days. On the whole, the keeping qualities of the dry cured bacon are superior to those of the tank cured product. The N.F.U. committee point out that curers in Denmark, Canada, Holland, and the Baltic States have all adopted the tank cure for bacon for the British market. As far as the co-operatives are concerned, it is pointed out that either cure is satisfactory provided particular market requirements are studied, and the appropriate selling policy linked up with technical factory management.

The committee believe, however, that for the expansion of the British curing industry, the tank cure must be more generally adopted. The market for the home-produced commodity has been confined hitherto to a relatively small demand for a superfine product, which fetches a price above that paid for imported bacon. With the expansion of the industry, the rate of turnover becomes a matter of paramount importance. The dry cure involves the locking up of large sums for twenty-one days, as compared with nine days for the cheaper cure. If any considerable advance is, therefore, to be made into the field of demand that is at present occupied by the Danish product—a product that satisfies a large part of the consuming public—it can only

come with the production of the cheaper product. The committee add that the production of the million porkers required by the London market to make good the supplies formerly received from abroad before the imposition of the embargo, should not obscure the fact that the permanent expansion of British pig production depends upon the expansion of the bacon industry.

CAUSES OF DIFFICULTIES OF CO-OPERATIVE FACTORIES.

The English bacon factories that have been organised on a co-operative basis have experienced many difficulties. Some have achieved a measure of commercial success, and others have met disaster. It is pointed out by the N.F.U. committee that such enterprises make a greater demand on capital, technical skill and commercial capacity than any other form of co-operative marketing practised in the United Kingdom. All these factories have experienced difficulty in establishing a highly technical business where the supply of raw materials could not be depended upon. Attention is drawn to the fact, however, that the Danish factories in their early experience met with similar disappointments, which in the end were overcome.

It is true to say that certain of the factories began operations when prices of pigs were depressed. The large number of pigs handled in the opening period merely accentuated these difficulties and losses, and that at a time before the quality of the product had been established and an assured market found for it. When a certain amount of experience had been gained, low prices had cut off essential pig supplies, and some of the factories were operated up to only fifty per cent. of capacity. In 1924-25, decreasing pig supplies coincided with a heavy increase of importations of mild-cured bacon, and that at a time when the decrease in the supply of raw material synchronised with an increase in its price. These societies, unlike some of the other curing establishments, had been unable to build up reserves during the period of low pig prices. The committee state that in justice to the four post-war factories, three of which have suspended curing operations, mention should be made of these considerations. The comparative success of the Oxford factory was due to certain features not common to the other three. These were: careful organisation of supplies; careful planning of the lay-out; a relatively low capital expenditure; reasonable administrative charges; the adoption of tank curing with a quick turn-over of capital, and the disposal of the product through efficient marketing channels. The opening of retail shops proved profitable, while the system of membership contracts followed helped to maintain supplies.

Lack of loyalty on the part of members who were too easily discouraged by the early setbacks, is set out as one of the fundamental causes of failure. There was too great a tendency to rely upon the services of a few enthusiasts, rather than to take a keen interest in the undertakings once they were launched. Moreover, members acting on committees of management did not understand this highly technical business, and were forced to rely upon paid managers who were not

always competent for the task. The lack of skilled direction and of unified responsibility had much to do with the losses that were incurred.

The quality of the bacon manufactured by the older societies was undoubtedly high; but the newer factories were unable to hold the market because of faulty curing in their early days. In 1924-25, some of these factories, because of inferiority of product due to faults in curing and poor type of bacon pig received, secured less for their product, on the average, than the average price at which the best imported bacon was sold on the London market. The N.F.U. committee, therefore, recommended an attempt to secure a general improvement in the quality of bacon pigs, and a careful scrutiny of manufacturing and selling methods.

It is pointed out that, in the case of co-operative factories, there is a tendency on the part of farmers who supply pigs to take too short a view of the situation, and to regard the prices they receive for supplies as the only important factor, which view menaces the financial stability of the undertaking. Hence, although committee control is inseparable from co-operation, the N.F.U. investigating committee recommended that a small executive committee should be chosen, composed of men of business experience, the general committee functioning as an advisory council. The executive committee would lay down the general lines of policy, and the chairman would act as managing director. The selection of a capable manager is of vital importance, and the committee should be prepared to offer an attractive salary to an experienced and capable man. The general-purpose manager is, perhaps, the ideal; but in any event, there must be first-rate business capacity somewhere behind each concern. In Denmark, technical knowledge was at one time emphasised, but the present tendency is to select managers of proven business capacity.

In order to understand the financial condition of each branch of the business, it is essential to introduce a modern cost-accounting system, to stop leaks and make most profits. Too many co-operatives have failed because certain branches of the business have operated in the dark. The establishment of a central bureau to pool the experience of all the factories would be to the advantage of all. This bureau would take care of such items as the installation of uniform accounting; the conducting of research; and providing data on operation and selling for the use of committees and managers. The results of commercial research, the new technique of modern business, would ultimately pay the entire cost. It has been suggested that, as between co-operative factories, there should be no wasteful competition.

CONTRACTS AND SUPPLIES.

Attention is drawn to the fact, by the N.F.U. committee, that a continuous and adequate supply of raw materials is essential to the success of any manufacturing concern. In this respect, statistics show that the English co-operative bacon factories have failed to secure adequate supplies of pigs, though the figures vary widely from factory

to factory. Even in 1924, when the pig holdings of the country constituted a record, the number of pigs received by the five factories for which figures are available amounted to little more than 70 per cent. of the annual output capacity, and these were not all bacon pigs. In 1925, the situation in this respect was even worse. It is obvious that deficient supplies mean higher handling costs per pig. In one factory that was working nearer capacity than the average, cost studies showed that every pig handled in 1925 was costing 1s. 7d. more than would have been the case had the plant worked to capacity. This is a serious item in an industry which is competing in an open market with imports from abroad. Shortage and irregularity of supply are factors that affect the English bacon industry as a whole, and are not peculiar to the farmer-owned concerns. It may be added that only two co-operative bacon factories ventured to introduce membership-contracts, and one other made participation in surplus earnings contingent on the supply of an agreed number of pigs. In the case of the first of the two factories which adopted the contract system, the experiment proved a signal and costly failure. The second factory fared better, but contracting members defaulted to the serious extent of over 5,000 pigs in 1925. This factory received the largest number of pigs, expressed as a percentage of output capacity, of all the co-operative factories in 1924 and 1925. In neither case were steps taken to enforce the penalties for non-observance of the contract.

It was found impossible to reach unanimous agreement, in the case of the committee appointed by the National Farmers' Union, with respect to the necessity of providing contracts in the English co-operative bacon industry. It was stated that under the peculiar circumstances obtaining in English marketing conditions, it was difficult to reach definite conclusions on the contract problem. The committee stated the case for and against the contract system as follows (N.F.U. No. 31, pp. 38-40) :

AGAINST THE CONTRACT SYSTEM.

(1) Farmers cannot afford to take the risk of being tied to one particular outlet for their pigs when they may be able to obtain better terms elsewhere.

(2) It is unreasonable to expect farmers to tie themselves to produce pigs always, as market conditions may, at times, make pig production unprofitable; membership contracts do not guarantee a minimum price.

(3) Contracts, to be effective, must, if necessary, be enforced. Once enforcement is resorted to, the goodwill of farmers is jeopardised, and the last state of the factory is worse than the first.

(4) The contract system puts a premium on inefficient factory management; assured of adequate supplies, there is no incentive to justify members' patronage.

(5) The two pre-war factories have grown up successfully without the crutches of a contract system.

FOR THE CONTRACT SYSTEM.

(1) The membership contract restrains competitors from attempting to disrupt the organisation by offering temporary advantages to members in the early days when it is faced with its chief difficulties.

(2) It ensures, in advance, a steady turnover which enables a factory to meet its business problems with foresight, and to render the maximum service at the minimum cost to its members; it strengthens the credit status of the organisation. If efficiently managed, a co-operative bacon factory backed with the fully guaranteed support of its members must, therefore, be in a position to make better returns to its members than can be obtained from non-co-operative curing establishments. If, owing to abnormal circumstances, common to the curing industry as a whole, it were unable to pay comparable prices to those ruling for similar pigs on the pork market, it could always market its members' pigs as pork.

(3) The membership contract is an expression of the same necessity that large and financially powerful manufacturing businesses are experiencing under modern industrial conditions of establishing close business relations or control over the source of supply of raw material. Without it, the co-operative bacon factory industry cannot hope to acquire the strength and vigour which should be inherent in its constitution, or to benefit from the productive and distributive economies of integration.

(4) The fact that the two oldest factories have carried on a successful business for over fifteen years without contracts shows, it is true, that co-operative bacon factories can make profits without the aid of the contract system, but, in neither case, has maximum earning power been attained.

(5) If contracting members took sufficient interest in their organisation, there need be no risk of their being tied to an incompetent concern; the power to change the management at any time is in the hands of members themselves, and also the power to abolish the contracts altogether. Moreover, the usual form of contract provides for withdrawal at intervals. There need thus be no risk of members being tied to unremunerative production. Further, since the contract system rests on the will of the majority, it is at least arguable that a factory would not lose the goodwill of its members if, in their interests, it enforced the contracts against a defaulting minority. Finally, a current market price could always be defined as the basis of payment for pigs under a membership contract.

As has been stated above, there was serious disagreement on the committee with respect to the value of the contract. Some of the members of the committee felt that farmers, by making use of contracts, would be taking a step toward the facilitating of collective bargaining with respect to pig prices, and that this would aid in evening out the recurrent periods of under- and over-production. Any live-pig marketing societies that might be formed in the future would afford a means of extending the practice.

METHOD OF PAYMENT.

Lord Linlithgow and Mr. A. W. Street suggested that the British method of buying pigs outright at market prices was not a desirable practice for co-operative bacon factories, and that the Danish method was to be preferred. They state that a practice which gives producers cash down, and shifts the risk of changing price levels to the society, admittedly has its attractions, but that it is not sound co-operative policy. Farmers should assume these risks in exchange for the rewards that come with control, and the economies of integration. It is alleged that a price policy along these lines would have saved many co-operative marketing enterprises in Great Britain from disastrous losses. They contend, moreover, that if, after a sufficient trial, the advance payments plus the subsequent settlements do not compare favourably with the net returns which members could have obtained by marketing through other channels, it would always be open to them to make the necessary changes. In view of these considerations it was urged that every effort should be made to bring home to farmers the significance of this principle of payment in order that it might become the practice of co-operative marketing organisations in the United Kingdom.

QUALITY AND GRADES.

During the two years under review by the N.F.U. committee, namely 1924 and 1925, it was discovered that the factories made a practice of paying premiums ranging from 6d. to 1s. per score on all pigs, within certain specified carcass weights, that, when slaughtered, were regarded as capable of producing first class sides of bacon. The weight and quality specifications corresponded broadly to the needs of Wiltshire-side curers, but the actual weight grades varied from factory to factory. Moreover, some factories had one premium grade, while others had two. The committee referred to the suggestion that a farmers' representative should be present at each factory to check weights, and while suspending judgment on this point, advocated that such a man, if so selected, should, after acquiring sufficient experience, check the quality grading as well.

It was further suggested that an effort should be made to introduce a uniform system of grades and premiums for all co-operative factories. The committee saw the advantages that come with uniformity, but also pointed out that the weight-grade most suitable for selection for premium purposes varies with the market cultivated for the product. Hence, the premium which a factory can afford to pay must vary also. It was hoped, however, that the practice, as such, would be continued, and that a more complete system of weight and quality grades, with appropriate price differentiations, would be enforced.

The committee believed that the co-operative factories had grounds for complaint concerning the quality of pigs forwarded to them. Considerably less than half of the pigs, during the period investigated, were placed in the premium grades. This was a difficulty with which all English curers were confronted. One of the causes of this condition

was the double objective that producers kept before them, namely, producing pigs for both the pork and the bacon markets. While the pork market can take pigs of almost any weight, bacon factory demand is quite closely defined. From the latter standpoint, weight, quality of meat, and conformation of carcass are all factors of great importance. Breeding and feeding, therefore, are complementary to each other; producers must pay strict attention to both to achieve the desired results.

CANADA AND THE BRITISH MARKET.

There can be no doubt that the movement to promote Empire trading is securing a firm hold on consumers in the United Kingdom. The time is opportune to capitalise this sentiment, and to push Canadian bacon and other agricultural produce to the fullest possible degree. The activities of the Empire Marketing Board are being closely studied in Denmark, the United States and other countries which place agricultural products in the British market in competition with home and overseas agricultural produce. It should not be forgotten that Denmark, the United States and other countries export to the British market goods that are not only standardised, but possess also high qualities that appeal to the consumer. Therefore, the sentiment in favour of Empire goods will not in itself secure desired results unless the Dominions in general, and Canada in particular, endeavour to place in the British market produce of the highest possible standards. Canada must have, therefore, a well organised plan for the pushing of its products, both to offset the keener foreign competition that may be expected as well as to give this country its relative position of importance among the Dominions. Along with the general improvement of our food products must go a systematic and persistent advertising campaign.

Some of the Dominions have already taken action along these lines. For example, the organised meat industry of New Zealand has legislative authority for making a levy of two cents per quarter of beef, and four cents per carcass of lamb or mutton exported, to provide for the costs of more efficient marketing. These costs arise in connection with advertising and the activities of a board set up to regulate meat shipments and to enter into negotiations for the securing of favourable rail, ocean and insurance rates. The board, up to the present, has made only half the authorised levy, but it has achieved very important results. The board's income for the financial year 1926 amounted to £31,072, and its reserves for the period of operation, 1923-1926, amounted to £51,781. New Zealand has also formulated comprehensive plans for increasing its sales of butter, cheese, apples and honey, in which advertising plays a large part. Australia has prepared a programme to assist in similar ways, its dairy and fruit industries.

The sum of \$100,000 was voted at the last session of Parliament to assist Canadian producers and marketing associations to place their commodities in the British market. This sum will be made available by the Department of Trade and Commerce on a contributory basis,

the Government proposing to give an amount equal to that furnished by marketing associations which are attempting to secure the required publicity for the sale of Canadian products in the British market. The department is prepared to discuss plans for achieving this object with any marketing or co-operative association, and has several such plans under consideration at the present time.

It is understood that it is not the department's intention to dictate the methods to be pursued, but rather to take charge of the programme of publicity under whatever plan is mutually decided upon. Methods will, naturally, differ according to the commodity to be marketed. A seasonal product, such as apples, will demand different selling methods from those employed in marketing, say, canned fish. In some instances direct advertising will be found desirable; in others, assistance to the retailer advertising and pushing the product will probably be found more profitable. It is earnestly to be desired that this good beginning will rapidly take shape in a more comprehensive programme for providing necessary publicity for Canadian products in the markets of the United Kingdom.

THE EMPIRE MARKETING BOARD.

It is impossible to estimate too highly the potentialities of the Empire Marketing Board as an instrument for improving primary production and promoting efficient marketing of home and overseas products. Through personal discussion of these problems with members of the Board, and after examining its methods and accomplishments, the conclusion was reached that much of enduring value had already been done, and that its activities held much of promise for the future. The Empire Marketing Board was established in 1926, and an annual grant of £1,000,000 placed at its disposal, by the United Kingdom. Its personnel includes not only representatives of the Imperial Government, but also of the other constituent parts of the Empire. The Empire Marketing Board, as the executive organ of the Imperial Economic Committee, is endeavouring to do for the trade and commerce of the Empire what the Committee of Imperial Defence does for its military and naval protection.

The grant of £1,000,000 per annum undoubtedly places a heavy burden on the British taxpayer, and at a difficult period in Great Britain's economic history. In explanation it may be said that it represents in part the value of certain preferences, promised during the Imperial Conference of 1923, which later events made it impossible to grant. Moreover, there is no intention to penalise the British producer by increasing imports of agricultural commodities at his expense from the overseas parts of the Empire. There is an ample margin within the limits of British consumption to provide for the expansion of sales of home and overseas products, at the expense only of the foreign producer. Only about 15 per cent. of the Board's expenditure has definitely been devoted to single parts of the Empire. The balance of the £774,000 (which is the total of the commitments for this year) is devoted to objects which will benefit all parts of the Empire. Since

Great Britain is providing the larger part of this money, the percentage spent within this category may properly be increased, when it is recalled that 2,000,000 square miles of the Empire lie within the tropics, and their products cannot possibly compete with the farm products of the United Kingdom. It is important to observe that the Board has complete control of its own income, and that, therefore, its finances are Imperially controlled. In addition to the funds provided this year by the British taxpayer, the large sum of £230,000 has been secured from various outside sources, including the Rockefeller Institute, the Empire Cotton Growing Corporation, the Zionist Organisation, and various Dominion Governments.

Upon the raw material of the various reports of the Imperial Economic Committee, the Board has already erected an imposing fabric of scientific research and economic investigation. In the field of science its method has been to assist labourers already at work, and not itself to engage in similar activities. Practical results of great economic importance are already forthcoming. These aspects of the Board's work are all directed to secure not only greater productivity but improved quality. These factors have an important bearing on the Board's more obvious work, namely, greater sales through publicity of home-produced and overseas products. Hitherto the work of the Board in this respect has been strictly impersonal. It has attempted to arouse interest in Empire products, but it has not attempted to direct demand to particular shopkeepers. It is now ready, however, to co-operate with the central organisations of the retail trade with a view to closing the gap that has existed in its publicity campaign, by informing the public where to buy the goods recommended. The Board, in its publicity campaign, asks the British housewife to request first the produce of her own country, and next to ask for the products of the Empire overseas. The Board's views on publicity are best expressed in the following extracts from its first annual report:

"The board has conceived its main function in the field of publicity to be that of creating a background against which individual governments or trading interests can throw into relief the claims of the particular commodities in which they are interested. This principle, at first adopted as a provisional guide, has lately been deliberately reaffirmed. While this does not prevent the board from drawing attention in general terms at the appropriate seasons to particular varieties of Empire produce, it has caused it to refrain from undertaking or subsidising special campaigns on their behalf. It has meant that the board has been engaged less in furthering directly the sale of individual articles of Empire produce than in creating a consciousness of Empire among a public that might thus be led to respond more freely to the direct appeals of other advertisers.

"The publicity work has thus been more difficult than it would have been if it had been limited to the advertisement of particular products. The board has set itself to advertise an idea rather than a commodity and has, in consequence, sometimes had to meet the criticism that its campaign was not sufficiently definite. . . . It is as yet too early to attempt any assessment of results; but there are evident signs up and down the country of a fresh and growing interest in the possibilities of Empire development and trade. The board's campaign has, it is hoped, made some contribution towards this unmistakeable movement of public opinion."

The working programme of the board covers, as has been intimated, a wide field in research, including: animal husbandry, animal breeding, fruit growing, low temperature problems, entomology, dietetics and Imperial co-operation in the field of agricultural research generally. Economic investigations are being undertaken in the marketing of home agricultural produce, the wastage of Empire fruit, the marketing of dairy produce, and in building up a fruit intelligence service. These investigations bring the Board into touch with overseas producers, who are encouraged to visit England to study the market and its special requirements. The Board has also under consideration a plan for making a contribution toward the actual cost of marketing British pedigree livestock in other parts of the Empire. It is considered beyond the scope of this investigation to undertake any critical analysis of the activities of the Empire Marketing Board. It is laying broad and strong foundations for the rearing of an economic structure which must prove invaluable for the future trade and commerce of the Empire. It has begun wisely in placing the emphasis upon the necessity of producing quality goods. It is equally wise in exploring new sources of supply of essential commodities within the Empire. The urgent necessity of linking up scientific research with agricultural production is obvious. Nevertheless, one may hazard the opinion that care should be taken to relate scientific research with the actual work of marketing the agricultural produce of the Empire.

CHAPTER XI.

CONDITIONS IN THE CANADIAN HOG INDUSTRY.

The hog industry of Canada is affected in many particulars by the conditions obtaining in the United States. The factors that influence supplies, moreover, are basically the same in Canada and the United States as those that operate in the United Kingdom. When costs in their relation to prices are such as to assure the farmer a reasonable return for his productive efforts, the effect is seen in an increase of supply. There is this further controlling factor in Canada as elsewhere—profits must be in relation to what the farmer can secure by utilising his land, labour and capital in other directions.

Despite tariff and other obstacles that may be thrown in the way of the free flow of trade between Canada and the United States, the demands of the American market affect both directly and indirectly prices, volume of supply, and marketing trends in Canada. While this is true of Canada's production in general, it is particularly true of the hog industry which responds so quickly to price changes. Recent conditions in the United States livestock industry, therefore, may be briefly examined with the view to understanding their bearing on the Canadian situation.

The year 1926 was one of comparative stability in the United States livestock industry. Federally inspected slaughter is fairly representative of production for the entire country, comprising, as it does, about 60 per cent. of the total. From these returns showing a slight increase of slaughter, the conclusion may be reached that there was very little change, for the livestock industry as a whole, as between the years 1925 and 1926, although the average price of livestock was somewhat higher in 1926 than during the preceding year.

The number of hogs slaughtered under federal inspection in 1926 was about 6 per cent. less than in 1925. Types going forward to market, however, were radically altered, for the abundant supply of cheap corn caused producers to feed their hogs to the heaviest weight in years. It is calculated that the decrease in weight of pork produced amounted to only 2 per cent. owing to the heavy feeding.

The high level of employment and business activity in the United States during 1926 hardened pork prices and carried them even higher than the figures reached in the previous year. Hog prices averaged \$12.40 at Chicago as compared with \$11.80 for the 1925 period. This increase took place notwithstanding the decline in the European demand which followed upon unsettled financial and industrial conditions, together with a heavy increase in production of pork products. Exports from the United States to the European markets fell away, and lower prices were realised upon this part of total sales. At the same time the higher prices in the domestic markets more than offset the decrease in the supply, so that it was calculated that producers received approximately \$50,000,000 more for their hogs than in 1925. High prices for hogs combined with low prices for corn resulted in the highest

corn-hog ratio since 1893. Results of feeding corn to hogs, therefore, were exceedingly satisfactory to the hog raisers of the United States during 1926.

It is calculated that hogs bring to the farmers of the Corn Belt about one billion dollars a year, or one-fifth of their total cash income. In this area, probably the greatest food producing territory in the world, hogs and corn are the basic products of agriculture. Hogs fit admirably into the system of diversified farming practised; they convert about 40 per cent. of the corn into meat for domestic and foreign consumption; they consume much feed that otherwise would be wasted; they require equipment that can be provided at moderate cost; and they reproduce more rapidly than other kinds of livestock.

These facts are realised keenly by the farmers of the Corn Belt, who have been steadily increasing production of hogs during the past fifty years. Not only have they increased their holdings absolutely, but also relatively to the total hog production of the United States. The number of hogs in most other sections of the country has decreased since the war, but the trend has been upward in the Corn Belt. It is estimated that the three Northwestern States, Nebraska, South Dakota and Minnesota, have increased their production of hogs 30 per cent. since the close of the war.

As is well known, hog production shows a tendency to move in cycles of fairly uniform length. In the United States the general tendency is two years up and two years down, which gives a four-year cycle of production. With increased supplies, other things being equal, prices fall and profits are curtailed. Heavier production of hogs intensifies the demand for corn and other feeding stuffs, which causes the price of these commodities to rise. As a rule, high corn prices combined with low hog prices bring about a more or less serious reduction in profits, thus discouraging hog production. Producers raise fewer hogs, and two years after the loss in feeding operations occurred diminished supplies of pigs are brought to market. The decline in the price of corn makes hog production more profitable once more, and this in turn results in heavier supplies of hogs four years from the last preceding period of heavy production. These conditions are characteristic of production not only in the United States, but in Canada, Great Britain and elsewhere. The only difference is that the cycle has been more uniform in the United States, because of the relation of corn to hogs, than in other countries.

It goes without saying that such fluctuations in pig production are bad for all concerned—producers, packers, retailers, and consumers. It is of the first importance to smooth out the cycle, and secure, if at all possible, greater uniformity of supply. Profitable prices for producers is the first essential. Farmers should study the cycle, and plan individually to produce for the short market. There are other factors in the situation, of course, which are largely beyond the producer's control—fluctuations in the size of the crops, weather conditions at farrowing time, losses from disease, general business conditions at home and abroad, changes in legislation, and the like. But much can be done both by the individual and the state to make hog production more

profitable and to eliminate the risks of production and distribution. To secure lasting results, the farmers of the United States and Canada must show the same persistence in production that characterises the pig industry of Denmark.

Attention has been drawn already to the complexities of the pork business which, in the United States as in England, make serious demands upon primary producers as well as packers and curers. Unlike beef, which is nearly always sold fresh and often in quarters, pork is seldom marketed in carcass form. In the United States, the packers convert the hog into a variety of cuts and products which differ widely from one another in character and keeping qualities. These include fresh cuts and fancy meats; cured, smoked, and cooked meats; and various byproducts. As there is a separate consumer demand for each pork product, infinite care is lavished upon manufacturing and merchandising methods to provide the public with meats in the form desired. In addition to the edible byproducts, other byproducts are manufactured into a wide variety of commodities for personal and productive use. Moreover, many pork products are sold at various stages of manufacture. Hams, for example, are sold fresh cured, and smoked, although the larger percentage is sold in the cured and smoked form. High standards have been established in the arts of curing and smoking, chiefly with regard to the requirements of the domestic market.

THE EXPORT TRADE OF THE UNITED STATES.

The United States produces more meat than any other nation, but the greater part is consumed at home. It produces sufficient beef, mutton and lamb to supply its own requirements, and is the world's largest exporter of pork and lard. Its only important beef exports at present consist of oleo oil and tallow. The corn crop makes the United States the most important source of supply of pork and lard for the meat-deficient nations. Similarly, the fertile alfalfa plains of Argentina have made that country the greatest exporter of beef, as vast sheep ranges and pastures have made Australia and New Zealand the chief source of supply of mutton and lamb. Nevertheless, it should be borne in mind that only a limited amount of the world's meat production enters into international trade. Few countries have large meat deficits, because it is customary to adjust consumption to home production. Great Britain alone takes more than half the world's meat exports. Other large importers of meats are Germany, Holland, France, Belgium, Italy and Cuba. The European nations in general consume less meat per capita than the surplus producing countries of the New World. In the densely populated countries of Asia, the people are too poor to buy large supplies of meat; and in some of these, the eating of meat is contrary to the religious principles held by large numbers of the population. Hence, because of religious scruples, custom, or economic necessity many millions of people are vegetarians.

For present purposes, it is not necessary to follow in detail the historical trend of United States export meat shipments. To provide the background for the proper understanding of the prospects for

the Canadian livestock industry, the outstanding facts of the American export trade may be briefly presented. At one time, during the pioneer period of United States agricultural development, that country enjoyed a large export trade in both dressed beef and live cattle. Before the days of refrigeration, it exported both salted and pickled beef. During the eighties and nineties of the past century, American packers developed an important dressed beef trade with England. These exports continued in volume until about 1907, after which year they fell away rapidly, as did likewise the exports of live cattle. By 1914 exports of beef had practically ceased.

The competition of the Argentine Republic was a major factor in bringing this important export trade to an end. Taking advantage of its fertile grazing lands, its low production and transportation costs, and the devices of modern science, that country built up a very large business in dressed beef with Great Britain and the Continent. With the pressure of population upon the agricultural lands of the United States, the great ranches were broken up, and the grazing lands devoted to other forms of agriculture. Finally, the population of the United States increased to a point where production of beef was devoted to meeting the requirements of the home market. As already observed, surplus supplies of meat products in the United States are confined today largely to pork and lard, oleo oil and tallow. Some cured beef is sold abroad, as are also supplies of such food products as butter, eggs, cheese and poultry.

The big American packers have their own export sales department, and also maintain export organisations at New York, the principal port of shipment. One of the most important packing houses markets its products abroad in the following four ways:

1. Through direct representatives located in foreign countries.
2. Through foreign agents or brokers located in countries where the volume of business does not justify the maintenance of a representative.
3. Through export brokers located principally in New York City, who represent, and consummate orders for, foreign buyers in all parts of the world.
4. Through direct sales to foreign merchants.

By one or other of the above methods, this packer's goods are sold in practically every country in the world, but the following are the chief outlets for its products:

Great Britain	France	Cuba
Germany	Switzerland	Jamaica
Holland	Italy	Porto Rico
Belgium	Austria	Mexico

Few realise the difficulties to be overcome in processing and marketing meats for the export trade. Each nation and each world region presents a different group of problems, and special manufacturing and merchandising methods must be devised to meet them. Care must be taken in selecting the right type of live animals, and special curing and processing methods must be used. Containers must be adapted to the length of voyage, and the climatic conditions in the

countries of destination. The export merchandising problems of the United States are complicated, also, by the number of countries absorbing meat products, the different tastes of those countries, commercial customs, and the forms of money used. In Great Britain particularly, which takes large amounts of export hams and shoulders, bacon and lard, the selling problems are difficult. The wholesale trade of Great Britain is organised on a different basis from that of the United States. In the latter country the packers' branch distributing houses sell both fresh meats and cured products; in England, one branch of the trade deals in dressed beef, mutton and lamb directly with retailers, while another branch sells cured pork products and lard through smaller wholesalers who, in turn, sell to the retail trade. As has been stated, in some parts of Great Britain hams and bacon are not smoked, but sold "pale dried"—that is, the meat is merely washed and hung up to dry.

American hams are well liked in England, but American packers have found it difficult to meet the English requirements for a lean, mild bacon. This is due in part to the customary process of manufacturing and curing in each country. In England practically the entire side of the pig, including the loin, is cured and made into bacon, while in the United States less than one-fifth of the full side is termed bacon, the remainder being marketed in various forms under specific trade names such as loins (pork chops), butts, shoulders (picnies), and lower priced cuts including fat backs, clear plates, spareribs, and pork trimmings.

American packers, therefore, make an intensive survey of foreign markets in endeavouring to meet special demands. The English like their pork products lean, while the German consumers desire theirs fat. Germany, consequently, takes large quantities of United States fat pork and lard, being the second largest foreign customer for American pork, and the most important for lard. The French and Italian trade takes chiefly dry salt pork. The Scandinavian countries absorb chiefly pickled pork and beef. Belgium and France import considerable quantities of sausages. Holland takes the greater part of American exports of oleo oil, which is manufactured into oleomargarine. This is exported to the Danish market in volume, and the Danes in turn use it as a substitute for butter, exporting the latter product to England. Holland imports large amounts of American pork products, but sells most of them to other countries, the Dutch merchants being meat brokers on a large scale.

The West Indies and Central America take large amounts of highly seasoned sausage and hams, and other cured pork products as well as lard. Here again, special trading peculiarities must be closely studied, both with respect to the processing of the product and its protective covering. Little or no meat is exported to the Far East, but there is a considerable trade with China and Japan in gall-stones from cattle, used in those countries for medical purposes.

As already mentioned, the export trade in pork and its products to Great Britain has fallen off considerably in the past two or three years. This has been due, among other reasons, to the decline in

American hog supplies, and the ensuing rise in prices. It is probable that higher hog prices in the United States have been a contributing factor in the increased hog production of various European countries. In the opinion of some leaders in the trade, American exports to Europe will increase again in the future, when supplies have overtaken the domestic demand. Pork and lard were exported in volume in 1923, when more hogs were raised than ever before. It is argued that when there is a heavy supply of pork, and prices fall, the rest of the world can afford to buy the American product. It is further stated that when supplies are light, as during 1926, the domestic market bids up the price of pork to a point where foreign consumers can not follow. It is recognised in the United States that European countries in general, and Great Britain in particular, have access to world sources of meat supply. Until more stable commercial and financial conditions are established it will be difficult to estimate the volume of American meat and lard that can be marketed in Europe. In the meantime the United States packers exercise continuous sales pressure to maintain, as far as possible, their hold on foreign markets.

BREEDS OF SWINE IN CANADA.

Canadian farmers breed the Yorkshire, the Berkshire, the Duroc Jersey, the Chester White, the Poland China, the Tamworth and the Hampshire swine. The leaders of the swine industry select the Yorkshire and the Tamworth for bacon production, using improved types of the other breeds for bacon and lard production. The records of the Canadian Swine Breeders' Association indicate that these breeds, numerically, are held in the following order: Yorkshires, Berkshires, Tamworths, Chester Whites, Duroc Jerseys, Hampshires, Poland Chinas, and Large Blacks.

As is well known, the improved Yorkshire is one of the largest breeds of swine. While longer than pigs of other breeds, the Yorkshire is not as thick as pigs of other breeds that have been developed chiefly for weight and fat. Along with rapid growth, the quality of the meat is unexcelled, its long, lean sides producing bacon of the most desirable class. As a rule, the sows have large litters of uniform size. They are excellent nurses, and their young are vigorous and make rapid progress. Although improved Yorkshires have been imported into Canada for many years, the early importations were too frequently of the coarse, rangy, slow-maturing variety, and did not grow in favour in those districts where they were placed. In recent years great progress has been made in producing a Yorkshire of a smooth, lengthy type, which matures early and makes good gains either in the pen or on pasture. A mature boar in show condition should weigh not less than 700 pounds and a mature sow 600 pounds. Well-fed pigs should reach a marketable condition between six and seven months, and should weigh between 180 and 210 pounds.

It is thought that the Tamworth is the purest of the modern breeds of swine, being developed by selection rather than by the introduction of the blood of other breeds. The original stock was long in the limb, long and thin in the snout and head, and flat in the rib. The

pigs were active, good grazers, very prolific, but were slow in maturing. Later, in the effort to produce a quieter pig with better fattening qualities, crosses of pigs having a strong infusion of Neapolitan blood were introduced. The result of the mixture was a black, white and sandy pig. In the hands of Staffordshire breeders, all but the red and sandy colours were bred out, while at the same time care was taken to improve the feeding qualities of the animal. These breeders took care, also, to preserve the length and prolificacy of the breed, while reducing the length of limb, and increasing the depth of body. About 1870 the Tamworth came into prominence as an improver of other breeds. At that time the British curers launched a campaign looking forward to the production of the bacon-type pig, and against the short, fat and heavy shouldered pigs that were coming to market. The Tamworth quickly came into prominence owing to its capacity for converting its food into lean meat, and because it otherwise could meet the requirements of the bacon trade. It belongs to the large breeds, reaching weights almost equal to those of the Yorkshire. Mature boars in show condition should weigh from 650 pounds upwards, and sows about 600 to 650 pounds. Sows and barrows that are well reared are ready for slaughter at about seven months of age, and should weigh between 180 and 200 pounds.

In the Canadian livestock industry, as elsewhere, war-time conditions brought losses as well as gains. The abnormal demand for meats of all kinds resulted in high prices for off type hogs, as well as those of approved conformation and finish. There was not the same care given to the selection of breeding stock, nor did producers market at the best weights. Reference has already been made to the consequent damage done to the Canadian high class Wiltshire trade in the British market. Keen competition in that market and elsewhere necessitates improved production to secure quality, uniformity and volume of output. Doubtless, profitable markets are fundamental in assuring these desirable ends; but, on the other hand, quality production along with volume will accomplish much in establishing and maintaining such markets. Lard hogs can be produced in the United States corn belt at lower prices than in Canada. Ontario, a barley and oats province, leads in producing Canadian bacon, and that great province has the essential supplementary feeding stuffs to make bacon of the highest quality. The western provinces, as far as feeds are concerned, are in an exceptionally favourable position to produce bacon hogs. When considering comparative prices, it must be borne in mind that the lard hog of the United States must meet the competition of enormous quantities of vegetable oils placed annually on the market, and that the hog loses so much weight in fat trimmings that it can not compete with the bacon type as a meat producer.

Experience among Canadian producers often demonstrates that there is more in type than in breed. Nevertheless, breeding is of vital importance, and those breeds well established for his purpose should be selected by the producer. In Canada, the best results in the export bacon trade have been secured by breeding the right types of Yorkshires, Tamworths and Berkshires. It is not profitable to experiment for years

with other breeds, such as Durocs, Polands and Hampshires, when established bacon types are already available. Practical farmers, too, understand that not all Yorkshires are good bacon hogs, nor all Tamworths, and that only the long, smooth type of Berkshires get into the "select" class. Grading hogs has done much to drive home these facts to the producer. During the first six months of the new grading policy, only 13.3 per cent., or one hog in every eight of the 527,626 offered, graded select. In Denmark, on the other hand, where breed and type have been improved with the greatest care, upwards of 80 per cent. grade select. True, considerable improvements have been effected in the Dominion, but much remains to be done. Professors Wade Toole and R. G. Knox, of the Department of Animal Husbandry, Ontario Agricultural College, present succinctly the characteristics of the type of pig that should be marketed by Canadian producers:

"The bacon hog should be long and smooth, with a nicely arched back and a straight, trim and neat underline. Length without smoothness and finish does not make a desirable hog, neither do smoothness and finish without length. The jowl and shoulder should be light and smooth, showing no flabbiness in the former and no coarseness or openness in the latter. Heavy jowls generally go with thick, fat or coarse hogs. Heavy shoulders throw the side out of balance, too large a percentage of the cuts coming from this comparatively cheap end of the carcass. The neck should be light, not too long and yet not too short and thick. The back, from neck to tail, must be evenly and well fleshed. Good bacon hogs are not razor-backs. The side should be long and flat, carrying even with the shoulder and ham, of medium depth dropping straight from the back. No round-ribbed hogs can get in the select class. The rump should round off even with the arch of the back and should show no surplus fat at the tail head. The ham should be fairly full yet tapered nicely down to the hock. The bone should be clean and strong, and the body should show no tendency to wrinkle. The belly should be trim and neat, and the whole body should show that muscular tendency which denotes lean meat rather than fat. The pig must be finished but not over fat, and should weigh, at the market, 170 lbs. to 220 lbs., or 180 lbs. to 230 lbs. at the farm. Many a good hog is fed out of the select class by keeping him until he is overweight. Some are ruined through early pushing on heavy feed. Others go to market in an unfinished condition, and, while long and smooth, lack the finish which makes profitable killers. The Wiltshire side in greatest demand weighs from 50 to 65 lbs., and comes from the 160 to 210 lb. hog. Around 200 lbs. is the ideal weight at which to market the bacon hog, and while hogs may be made up to this weight at five and a half to six months old, from six to six and one-half and even up to seven months may be required to make choicest bacon. At the Ontario Agricultural College choice bacon hogs are brought up to 200 lbs. at from six to six and one-half months. Hogs finished too young lack length and muscular development. Those held back until too old are coarse, soft and undesirable killers. Good bacon hogs are long, smooth, trim, neat and muscular, which means strength of constitution but not a round fat belly, and which also means the proper proportion of lean to fat, and not a surplus of the latter for the lard kettle."

UNDESIRABLE HOGS FOR BACON PRODUCTION.

In an excellent survey of underlying production conditions that seriously affect prices received by producers for bacon hogs, Mr. J. B. Spencer, B.S.A. (Dominion Live Stock Branch, Bulletin No. 17, pp. 10-14), states that:

"There are a number of classes of undesirable hogs being marketed for bacon at all seasons of the year. These include un-

finished, overfat, prematurely finished hogs, and sows that have been used for breeding purposes. Of these the unfinished animals are the most objectionable, and during most seasons are marketed out of all proportion to what they should be."

According to this authority, the proportion of unfinished hogs has been, at times, as high as 15 per cent. of total receipts at packing houses in central Ontario, 20 per cent. in eastern Ontario and Quebec, and about 15 per cent. in western Ontario. In the prairie provinces, the tendency is to go to the opposite extreme, although the same difficulty is to be found there also. Such hogs depress market prices, since they tend to lower the repute in which Canadian bacon is held. The marketing of such pigs is, therefore, a very serious matter to all concerned. Pigs of this class dress poorly, give a low percentage of carcass, and yield an inferior product. Western farmers believe that, in part at least, the root of the difficulty lies in faulty marketing methods, under which a shortage of feeds bears heavily on the individual producer, causing him to market his unfinished pigs at a loss. Producers are of the opinion that it should be possible, under a systematic co-operative policy, to finish these pigs at central points, the costs to be deducted from the final market price. This phase of the question will be dealt with later. On the other hand, Mr. Spencer suggests that fear of a sudden break in market prices may send too many "grass," or unfinished, pigs to terminal markets. The opinion of several Canadian packers is quoted to the effect that such pigs will not make good bacon; that they are unprofitable to ship alive, and unprofitable to slaughter; and that when made into bacon must be sold at a heavy reduction in price. The chief objection to such pigs, however, is that they shrink in killing from 5 to 8 per cent. more than when they are finished, which adds to the cost of production and lessens the price that packers can pay. In the British market sides weighing less than 50 lbs. are not in demand, consequently the pig should weigh not less than 160 lbs. and be in good flesh to produce the wanted sides.

During the late fall and winter months, too, many overfat pigs come to market. Not meeting the requirements for prime bacon, it is evident that lower prices per pound offset the gains made from added weight. Much greater profit can be secured by adding the same number of pounds to animals approaching the finished condition. Moreover, feeding experiments go to prove that hogs carried beyond their finished condition do not yield returns commensurate with the added costs. Therefore, the marketing of pigs that exceed 210 lbs. live weight at market points, should be discouraged.

Prematurely finished pigs, that is, pigs weighing from 145 to 160 lbs. live weight, constitute another undesirable class. While meeting some of the requirements of the local market, these pigs do not make desirable bacon. On this point Mr. Spencer says:

"There is a demand for bacon made from these light, well-finished pigs, but it is so limited there is always danger of an oversupply, when the price is sure to fall several shillings per hundredweight, and the stock becomes a drag on the market. The pig of this class is not the fault of the breed to which it belongs, nor the character of the animal, but rather to the over-generosity of the feeder who has kept his

charge confined in close quarters, and forced it along from an early age to the finished animal of short dimensions and insufficient weight at from four to five months old."

Obviously, it is not in the interest of the bacon trade, nor of the farmer, to market animals that have outlived their usefulness in the breeding herd, as bacon producers. It is not good policy to breed from immature sows only, turning them to the market after they have reared only one or two litters. This will in time weaken the herd, and render individuals liable to ailments and weaknesses of various kinds. It not only injures the bacon market to dispose of young brood sows in medium flesh, but it also seriously affects the thriftiness and vigour of the herd. They should be retained, therefore, as long as they are useful for breeding purposes, and then finished for the heavy pork and lard trade. This is a problem of feeding and finishing. While the costs of the last two hundred pounds may be high, the animal has already presumably yielded good profits as a mother, and it is the finishing process that makes the carcass profitable to the producer.

PRODUCING A QUALITY PRODUCT.

Canadian farmers in general are aware of the fact that a heavy annual surplus above home consumption can be profitably marketed only by meeting Danish standards, and that no great gains can be made by producing the United States type of pig. If there is a surplus of the less desirable type, the Canadian packer can make a product only of the American standard, and that product must sell in competition with, and accept the same price as the United States bacon. Competition in Europe, the demands of the markets, as well as other factors compel the conclusion that quality production is essential for permanent success.

Experience shows that there are specific reasons as to why more western hogs do not grade "select." There are two chief faults in the usual market run of such pigs—heavy coarse shoulders, and thinness of the pig. From an export standpoint, a heavy coarse shoulder at once throws a side of bacon out of the top grade, even though it may have length, and otherwise measure up to specifications. The British buyer is more critical of this feature than, perhaps, of any of the other wanted qualities. Hence heavy-shouldered sides sell at a considerable discount. Unfortunately, producers who in the past marketed the lard hog have permitted custom to dictate a heavy shoulder as a desirable feature of the finished pig. In some instances farmers have bought young feeders with heavy shoulders with the object of getting more weight from the finished animal. Even careful feeding and care—the real costs of production—can not correct a fault that has been bred into the hog.

Many breeders, on the other hand, who have started with the correct breed and type, make the mistake of confusing a thin hog with a select. One of the chief problems with which the Canadian packer has had to contend in the past has been to find the least costly method of disposing of underfinished pigs of the bacon type. An unfinished pig of this type is worth less to the packer than the over-finished lard hog, which can be trimmed and the surplus fat rendered. Too often

the thin pig yields only a flabby carcass, which must be sold at a heavy discount to move into consumption at all. There is a great difference between a well finished lean pig and an unfinished thin one, which can be best appreciated by comparing the carcasses on the rail.

These defects can be overcome by correct breeding and feeding. As stated above, the heavy shoulder is bred into the pig and its removal will depend upon constructive breeding, or the establishment of a new herd. It is of little avail to use the best Yorkshire boar in the district on old sows of the Berkshire, Duroc Jersey or Poland China breeds. Although fairly good length will be secured, these breeds have been used so long to produce a heavy pig with the maximum amount of fat, that it will take more than one or two crosses of bacon blood to reduce the shoulder to the form that is demanded in the British market. If the grading up process is followed, the producer must be prepared to make several such crosses before expecting the desired results. To avoid this long and somewhat arduous task, the farmer may purchase one or more bred sows from a reliable breeder in the autumn, or a number of good young gilts from one of the better herds in the spring. By careful handling and feeding, he will then be in a position to secure the right type.

Nevertheless, there are many difficulties in the way of the producer even after he has got command of the right stock. Overfed and underfinished pigs may be produced from the bacon type, unless feeding problems are closely studied. During the first few months, the young pig should be so fed as to secure steady growth with plenty of "stretch" rather than the development looked for in the lard breeds. If the pig has been properly developed up to 160 lbs., there need be little cause for concern that it will be too fat for the select class at 200 lbs. If it is a choice between shipping at 180 lbs., or holding the animal until it weighs 200 lbs., other things being equal, the latter policy should be followed. Feeds and feeding, therefore, may play the dominant rôle in producing for profit.

It should not be forgotten, in this connection, that in recent years Canada has made great strides in pig production, and that a period of rapid expansion is not favourable to improvement of quality. Nevertheless, valuable results in this direction have also been secured. Very significant improvements have been made in the quality of the thick-smooths coming to market; indeed, many farmers are marketing pigs just on the border line of the select class. Another cross of bacon blood, or a little extra attention to feeding, will place these hogs in the select grade. That is one reason why Canadian bacon is gaining in favour with the British housewife.

MARKET FLUCTUATIONS AND GRADES.

While self-interest demands that every effort should be made to improve quality and type, the problem of properly relating grade to market price is a very difficult one. It will be recalled that in November, 1921, at a conference of all parties interested, plans were made to encourage the production of the kind of hogs required to supply the British market with the best quality of bacon. Two lines of action

to this end were agreed upon: first, that hogs should be divided into grades by Dominion Government graders; and second, that where differences in price obtained, such difference should be on a minimum basis of ten per cent. for the grade "select bacon" over the second grade "thick smooth." Thus the "thick smooth" became the basic grade for pricing purposes. Differentials on the other grades were left to the operation of market forces. This was a purely experimental programme, the value of which to producer and packer could only be determined by the passing of time.

Subjected to the test of time, and to actual operating conditions in the market, difficulties began to appear. It had been hoped that the ten per cent. premium would be established as a minimum, and that with improving markets it could be widened. In response to this incentive, as stated above, the farmers did improve the general run of their shipments, and to such an extent that the difference in value between the thick smooth and the bacon pig narrowed instead of widening. The packers took the position that they could no longer afford to pay as high a premium as 10 per cent. on selects, as there was no longer so wide a discrepancy between the qualities of the two grades. They contended that the premium had always been recognised as an artificial and arbitrary figure, and that it was no longer an index to actual governing market values.

In spite of difficulties encountered, and disappointment of farmers in not securing the top grade, the general effect of the scheme undoubtedly was the production of better quality hogs. By organisation, by placing differentials in a more correct relation to market conditions, these difficulties, in time, would have been overcome. A number of new factors, however, now intervened, which for the time being practically ruined the Canadian bacon trade with Great Britain, and in a short period inflicted losses on the packers amounting to millions of dollars.

During the years 1925 and 1926 the margin between the cost of feed in Canada and the United States and the selling prices of hogs had been wide, ranging between \$7 and \$10 on a 200-pound hog. Thus, even those European countries that buy their feed from American sources, could purchase supplies and produce hogs on a basis that made it possible to lay down a cheaper product in the British market. The general level of prices for bacon on the British market had been, with the exception of short periods, sufficiently high to induce the Baltic States, Poland, and other countries to enter the British bacon market.

The factors, however, that brought about a sudden collapse of market prices had their origin in British policy, and disorganised industrial conditions due to the great coal strike. Reference has already been made to the British embargo on fresh pork from the Continent. In the ensuing six months after the embargo came into effect, Holland alone, turning from the fresh pork trade, sent upwards of 60,000,000 pounds of cured bacon to England. The Baltic States in 1926 increased their exports by 31,000,000 pounds over the exports of 1925.

The weakened buying power of the people could not sustain the former value of the produce, and the huge increase in supplies demoralised the market.

As is well known, however, the course of hog prices in the United States and Canada did not follow the trend of bacon prices in England. Hog production in the United States was below normal, and high industrial prosperity sustained the value of pork products. It was this situation that confronted Canadian packers, and which led ultimately to ruinous losses. For a short period in the early part of 1926 bacon prices justified high prices for hogs in Canada. It had been a common enough experience for Canadian packers to have bacon values fall below hog prices, and then come back again. For a considerable period the packers adopted this view, namely, that the discrepancy was temporary, and that bacon prices would recover. By following the policy of sustaining bacon hog prices, they suffered heavily. When, finally, Canadian prices came into line with those obtaining in the United States, the decline in bacon values was still so great that the losses were as serious as ever. It should be stated in all fairness, that the Canadian packers made a courageous effort to hold on to what they considered was their natural market, long after they should have curtailed shipments. Having accepted huge losses, they were finally forced to reduce shipments to the minimum.

They were forced, also, to find other markets, chiefly in the United States. In the domestic trade, both the "select bacon" and the bacon type "thick smooth" are superior to the fat type and poorer quality "thick smooths," and the other grades. The packers contend that in the United States markets there are practically no differences in value for any of our grades of hogs, except, of course, for roughs, sows and stags. Thus the 10 per cent. premium, under conditions that could not possibly have been foreseen, became difficult, if not impossible, to maintain.

Where the percentage of "shops," "heavies," etc., allow of such deductions that the premium can be balanced the plan as first developed might have been continued, were it not for the heavy exportation of hogs to the United States. American buyers, bearing in mind the essential facts referred to, naturally avoided offerings of hogs with any considerable percentage of "selects." If they took the bacon pigs, they usually made a flat price for all grades. In those districts of Ontario where the percentage of "selects" was greatest, the hogs as a whole, also, were of superior quality, and hence were worth more for the domestic trade. Export packers who drew heavy supplies from such territory, and paid on a grade basis, incurred heavy losses. The influence of the high prices on the Buffalo market on the Ontario situation proved disastrous to the grading plan. Buying on United States account, on a flat basis, induced peculiar anomalies in the Ontario hog trade. The packers contended that the hogs of southwest Ontario, from the standpoint of the domestic market, are of inferior quality; yet these are accepted at the Buffalo market at the highest price for their weights of that market. The prices of Ontario hogs in general were largely based on the prices of southwest Ontario hogs; which

meant that the price of "thick smooths" throughout the rest of Ontario could not differ widely from the market values of "southwest" hogs. This threw the higher priced "selects" out of line, from the packers' standpoint, with the general value of pig products. Although the same condition developed in the West, the lower percentage of "selects" and the higher proportion of overweight grades, made it easier for packers to maintain the premium payments.

GRADING AND FUTURE PRODUCTION.

Undoubtedly a situation has developed in the Canadian hog industry that demands the most careful analysis and investigation in formulating future policy. It is not likely that the present conditions will prove static, that they approach measurably to permanency. There is the possibility that the corn borer will make serious inroads in the United States corn belt, and reduce the yield to such an extent as to materially affect the demand, on the part of farmers, for pigs for finishing. As already stated, a combination of low hog prices, and high corn prices, results in small profits in feeding operations. This will have a tendency to decrease pig production in the two following years, and lead to a shortage of supplies with higher prices. While this cycle has been fairly constant in the past, there is no assurance that it is inevitable. The Baltic States will undoubtedly attempt to maintain their output, and also Poland, but not necessarily for the British market. Holland and Denmark, being dairy countries, will make every sacrifice to maintain pig production.

It is the opinion of leaders in the industry, that sooner or later prices for hogs and their products in Europe and in Canada and the United States must reach comparable levels. It is pointed out that before the war our present European competitors were heavy producers of pigs, a large part of the supplies being absorbed by Germany, France and Austria. Eventually, while identical market conditions may not be established, restored industrial prosperity will widen the market for these supplies. In pre-war days, the relation between grain production and pig production was close, and this relation will remain. Denmark, Holland, Sweden and Germany purchased feeds from Russia, Hungary, and Roumania. To the extent that these countries turn to pig production, there will be less grain available for export. Only on the assumption that there is to be a considerable increase of grain production on the Continent, can the conclusion be reached that there will be a great expansion of the hog industry. For that, among other considerations, it may be deduced the present pressure of European supplies on the British market is more or less temporary in nature.

It is unwise to rely, therefore, to too great an extent on the United States market as the natural and permanent market for the Canadian surplus. With the return to normal production in that country, it will be more difficult to dispose of that surplus. Then there is always present the menace of the American tariff. At present the farmers of the United States have succeeded in imposing a tariff of one-half cent per pound on live hogs, three-quarters of a cent. per pound on fresh

pork, and two cents per pound on processed pork. If United States prices fall to anything approaching production costs, Canadian prices for similar grades will follow. This will compel a return, in volume, to the British market.

Until it has been indisputably demonstrated that the American market is to be the dominant factor for the Canadian producer and packer, it would be folly to lower the grade of Canadian hogs. Neither primary producers nor processors can afford to lose sight of the British market, and the rôle it will again play in stabilising the industry. It is, therefore, essential to continue the policy of breeding the bacon type of pig. These hogs should sell at least on a par with the American product. In the meantime, by maintaining blood lines, when the time is opportune to enter the British market in volume, it will be possible to do so.

From every standpoint, therefore, grading should be continued, even if temporary market conditions must result in a reduction of the premium. The organised packers have gone on record to the effect that differentials, as long as the bulk of the surplus is disposed of in the United States, must depend on values established in the domestic market. With the return of British trade, the high-class bacon pig will again be in demand. Whatever premium market factors will allow, will then be paid. The danger of establishing an artificial premium is to be found in its instability, and the consequent disappointment to primary producers. The premium must, then, be in line with the effective demand for various grades, for eventually each grade of pigs must be placed on its natural price basis. Whatever additional costs must be assumed by primary producers, in marketing the bacon type of hog, will have to be paid for by the industry, if quality production is to be assured and continued. In the meantime, and from the long time point of view, the bacon blood should be retained and even improved.

It is idle to deny the fact that the reduction of the premium is a serious and disappointing step to farmers, the various departments of agriculture, and the manufacturers. It has been compelled by a condition over which the packers have had little or no control. While the prices of hogs have ruled high on the American markets, Canadian farmers have made substantial profits, but they have also been forced seriously to examine again the entire problem of grading, and their production policies. It is to be hoped that the Dominion Department of Agriculture, and the Provincial Departments, will continue unabatedly their splendid work of directing primary producers along the lines of sound production. At the same time it is equally essential to develop a marketing and grading policy that will stabilise the industry, and give encouragement through profitable prices to the farmers who are establishing the industry on firmer foundations. As the packers have stated, it is unfortunate that necessary changes in grading were not worked out at a time when market conditions would have permitted a clearer view of the entire situation. As they further state, the only sound policy is to put into operation a grading scheme that will harmonise with actual producing and marketing conditions, and that will function under any conditions that may arise.

SOME PREVENTABLE LOSSES IN MARKETING.

Losses, no matter of what nature, are paid for by the industry, and usually the place of final incidence is the farmer himself. It is not enough to produce high grade stock; it is vital to so improve the marketing mechanism as to secure the utmost return in value from it. While much has been said of preventable losses, these are so important that brief reference should be made to them. Many of these losses are due to obsolete methods of shipping and handling livestock. Bruising, which causes surprisingly heavy losses, can be eliminated by adopting proper handling and shipping methods. If not entirely eliminated, it should at least be reduced to a minimum.

Both beef and pork carcasses suffer heavily from this defect. Mr. S. E. Todd, who has made a careful and extensive study of the economic effects of losses from bruising has stated recently that, "One of the deciding factors in our ability to compete successfully in the world's markets for pork products will probably be the percentage of bruised product we shall have to market, or destroy because of its being unfit for food." It was observed, when inspecting carcasses on the rail in Denmark, that the losses from bruising were very small. This was due, probably, to the fact that the Danish farmer is paid for his pigs according to the way they grade when dressed. Thus a careful check is kept on the way pigs are handled both during their progress to, and upon their arrival at, the packing plant. Canada has followed the United States system of handling hogs, a system that presents the maximum of opportunity for injuring the pig before it is processed. As Mr. Todd points out, individual responsibility is lost during the entire period, beginning with loading at the farm and ending with the placing of the animal on the killing floor. First the animals are loaded into the wagon, then on to the scales at the loading station, from there they are taken to the holding yards, then into cars, unloaded at the stockyards into holding pens, graded and weighed, and then placed into other holding pens. They are then driven to the packing plants, or again loaded into cars, and placed in other holding pens before finally reaching the killing floor. There are too many possibilities for inflicting heavy losses on the shipment, all along the way.

It is scarcely necessary to describe the type of handling devices in use on many farms, the bad methods of weighing and loading at country points, the lack of provision for the proper partitioning of cars, and the risks of bruising that must be run when hogs are shipped on way-freight. Square cornered posts and right angled passageways in pens at loading stations, in cars, at stockyards and at the packing plants, all contribute to bruising losses. It is evident that carelessness is shown by employees at packing plants, also, and that heavy economic wastes occur because of lack of proper training and adequate supervision in handling the animals.

Many figures have been presented showing the seriousness of these preventable losses. At one plant, in a week's kill of 4,800 hogs, 1,200 or 25 per cent. of the animals were more or less seriously bruised. Another firm states that of 2,268 hogs received, 311 bruises



W. A. WILSON,
*Agricultural Products Representative for Canada
in London, Eng.*

were counted on hams, shoulders, backs and sides, and 633 whip marks and serious scratches. It is useless to present additional data in connection with this matter, for the evidence has been presented on many occasions in the press and on the platform. It is necessary, however, to emphasise the need for definite action to reduce these losses to a minimum.

SAFEGUARDING THE BRITISH MARKET.

For reasons already stated, notwithstanding what may be temporary conditions, producers must keep the British market in view. According to the British Board of Trade figures, Canada exported to Great Britain in 1925 some 163,000,000 lbs. of bacon and hams. On an estimate of 120 lbs. of product from each live hog, this would mean an export trade of about 1,360,000 hogs. The number of hogs graded in Canada during that year, at stock yards and packing plants, was 2,883,418. This embraced practically the total live hogs moving to market. Thus this part of Canada's export trade amounted to about 47 per cent. of the total number of hogs marketed alive in the Dominion. It constituted over 60 per cent. of the total of the "select bacon" and the "thick smooth" grades, from which nearly all the export cuts were made. The Government inspected packing plants slaughtered 2,641,731 hogs in 1925; therefore, the export business to Great Britain constituted 51 per cent. of the total hog business of these plants. Such figures strikingly demonstrate the vital part the export business, whether to Great Britain or to the United States, plays in Canada's hog industry. In that year practically one-half the live hog marketings were dependent on the export business with Great Britain, for an outlet. It has been calculated that from 25 to 30 per cent. of all the hogs produced in Canada in 1925 found a market in Great Britain. Aside from the serious collapse of prices in the British market, the new regulations with respect to the use of borax had a serious effect on the sale of Canadian bacon and hams to English country dealers.

PROHIBITION AGAINST THE USE OF BORAX.

The use of preservatives, and particularly the use of borax, which has been the only preservative used by the Canadian packers, has excited controversy over a considerable period of time. Borax played an important rôle in fostering export cuts of Wiltshires, Cumbertans, hams, shoulders, etc., to the United Kingdom. Canadian packers forwarded the product packed in boxes with borax, or packed in bales without the use of that preservative. Almost all the cuts were exported in boxes, with the exception of Wiltshires, this cut being packed about half in boxes and half in bales. When shipped in boxes, heavy wooden cases with a capacity of from 600 to 700 lbs. were used, and the surface of the meat was dusted lightly with borax prior to placing it in the case. Pressure was then applied to force the meat firmly into position. When the bacon was shipped in bales, it was first wrapped in cheese-cloth and then in heavy burlap, light rope being tied around the package to hold the sides, generally four in number, in place.

Briefly the reasons why Canadian packers used borax were as follows:

As already stated, the taste of the English consumer is one that demands bacon of a very mild, delicate flavour. He has been educated up to the use of this quality of bacon in his home-cured product, and unless the imported bacon is similar it is difficult to move it into the field of retail trade. The packers of this country, forced to overcome the handicap of distance to market, made use of borax to preserve the delicate flavour of the product during the weeks that elapsed before it could be finally placed on the breakfast table. They had a difficult problem, also, to solve, in overcoming poor shipping facilities, a slow service on land and water, and lack of refrigeration. More important still, perhaps, was the seasonal deliveries of live hogs, which resulted in periods of heavy and short supplies. Runs were concentrated over a few months, instead of over the entire year, as in Denmark. Thus the Canadian packer was faced with four difficult problems:

1. He was compelled to produce a commodity that would satisfy the English taste.
2. He had to overcome the obstacle of great distance from market.
3. He had to cope with inadequate shipping facilities.
4. He was obliged, as far as possible, to spread his concentrated supply over a greater part of the year.

Borax, being apparently the least harmful of preservatives, offered a partial solution of these questions; and thus the use of borax may be attributed, in part, to the development of Canada's huge export trade in pork products with the United Kingdom, which had been built up over a period of some forty years. Nevertheless, there were distinct limitations to the beneficial use of this preservative. Without doubt it was a factor in causing speculation in bacon at times of low prices, the product being held for a rise in market values. Instead of going into direct consumption, it was possible to hold boraxed bacon in store. Wholesalers, brokers, and even retailers speculated in Canadian bacon, and the result was of little or no benefit to the reputation of the product. There were also periods when the market was unable to absorb the supply, and the excess production was placed in store, with results similar to those mentioned above. Experience demonstrated that bacon which had been packed in borax for any considerable period of time, absorbed enough borax to rob the product of its natural delicate flavour, imparting to the bacon a flat taste. This loss of flavour was one of the contributing factors in placing Canadian bacon in a position inferior to that of Denmark and Ireland.

The damage which results to the reputation of a product, because of a deficiency in the quality of even a small percentage, is much greater than to the part which is so affected—in fact, it is likely to extend its influence to the whole. There were periods during which 90 per cent. of Canadian bacon was marketed in a fresh condition, the balance going into store. It was the stored bacon, with its lowered quality and peculiar taste, which created an unfavourable impression of the product in the retail trade. The consumer was not always informed concerning the difference between fresh and stored Canadian bacon. As a result, frequently, a small percentage of the whole injured

the selling price of the entire product; and not only injured the price, but seriously affected the demand for Canadian bacon. From this standpoint, nothing but good can follow the prohibition of the use of borax, provided a steady and uniform supply of Canadian bacon can be placed in the British market.

Danish bacon was, and is, shipped only in bales without borax, and moved into consumption while the flavour is still of high quality. Consumers, therefore, have received the most favourable impression of the quality and flavour of the Danish product. Danish exporters make much of the freshness and quality of the product in their persistent advertising campaigns.

The British authorities prohibited the use of borax, among other preservatives, only after careful investigation, and consultation with the trade. Great Britain was practically the last country to permit the use of preservatives in food imports from abroad. By 1910, the United States had prohibited the use of borax as a meat preservative, and in January, 1915, Canada issued regulations forbidding its use in connection with meats for domestic consumption. The various Governments enacted this legislation to protect the health of the people, and neither the Canadian producers nor packers consider that such action on the part of Great Britain is open to criticism. Nevertheless, the effect of borax in limited quantities on public health is open to debate. At the same time, the British Ministry of Health was quite within its rights when it decided that the use of this preservative was detrimental to the health of the people.

Ultimately, this regulation will have a profound effect on Canadian methods of shipping export bacon. Among the changes that have taken place has been the development of shipping bacon in bales. This practice has accomplished a great deal in improving the position of Canadian bacon on the British market. There is still much to be done, however, by way of conducting experiments, and making use of scientific research, in developing milder cures which will retain their delicate flavour, while permitting the product to be placed on the market in good condition. Already much headway has undoubtedly been made along these lines. Also, various methods of packing and shipping must be studied, to secure the most desirable ones. Probably, as far as the larger cuts are concerned, boxes will be gradually eliminated, and bales used exclusively. It is more difficult, however, to handle the smaller cuts in bales, but some modification of the bale may be developed to this end, or a smaller box utilised into which the meat will be packed without pressure.

It is the opinion of leaders in the industry that refrigeration will, in the future, play a much more important rôle. Much of Canada's bacon production has been forwarded to Great Britain, in the past, under ordinary storage, but proper protection necessitates the use of refrigerated space. It is felt that transportation must be prepared to accept greater responsibilities under the conditions that now obtain. It is vital that the product be moved from the point of origin to its final destination in the least possible time. Therefore, the railways and the steamship lines will have an important part to play in the solution of this problem. Moreover, it will be essential to regulate the

supply in such a way as to fill the requirements of actual demand, if primary producers are to realise the best prices. Storage can no longer be relied upon to provide a safety valve for excess production. In rebuilding the British market demand for the Canadian product, exporters must concentrate on forwarding uniform weekly shipments. Whether Canadian farmers, however, produce for the British or the American market, it is evident that a regular supply of live hogs, evenly distributed throughout the year, is the solution of preventing market gluts. There is a real danger of producing in such a way as to carry the supply to high levels, at one period, and then permitting that supply to fall away sharply at other periods. It requires only a relatively small surplus in any market, especially where storage facilities are not available, to break prices. Put in another way, when the supply reaches the saturation point a small surplus seriously depresses the market price. As far as the British market is concerned, unless the Canadian supply is evenly distributed throughout the year, farmers will probably receive for the bulk of their production a price lower than the average market price in England, for the entire year.

From the standpoint of the Canadian packer, saturated markets in Great Britain proved disastrous. As stated above, such markets cause periods of falling prices for the finished product. In producing for the British market, several weeks must elapse before the live hog is converted into bacon and landed in England. During this period of heavy production, the packers were at times forced to accept less for the finished product than they paid for live hogs. Ultimately, this must react upon the primary producer. Only profitable consumer demand can sustain prices over a period of time, and consumer demand can, in turn, be sustained only by properly adjusting the supply to that demand.

The effects of the regulations prohibiting the use of borax may, therefore, be summed up briefly as follows: The new order tended to eliminate the abuses to which borax has contributed, in marketing Canadian bacon. It took away the chief talking point of Danish competitors, who had made much of the fact that their bacon was placed upon the British market in a strictly fresh condition and unadulterated. It has compelled Canadian packers to concentrate in bringing manufacturing skill to the highest point of efficiency; it should lead to the establishment of a more rapid and efficient transportation system for Canadian bacon by land and water; and, finally, Canadian packers find themselves in a more favourable position than other producers, elsewhere, who have been using borax, as Canadian packers have been studying the problem, and conducting many experiments in connection therewith, over a period of years. It may be added, that personal inspection of Canadian bacon in the London and other markets showed that a good percentage was arriving in almost perfect condition. It has been demonstrated that the Canadian packer can place a high quality product on the British market despite the distance it must be shipped. The real problem is to find a profitable price for the Canadian product, and such a price as will induce packers to plan steady shipments, and encourage primary producers to improve the bacon type hog.

CHAPTER XII.

THE BRITISH MARKET SITUATION.

As already observed, the entire trade in bacon and hams has been undergoing drastic changes during the past five years. The growth of Danish trade was an outstanding feature in the post-war development, and much of this was obtained at the expense of United States and Canadian shipments. Following upon the Danish trade revival, was the expansion of Russian, Estonian, Latvian and Polish trade. The most recent development has been the sale of Danish, Dutch and Swedish bacon practically at cost price, and heavy increases of sides from Poland and the Baltic States. The factor of exchange has



Seen in Poland.

been an important one in the case of Poland. During the latter part of 1927, the "zloty," which should exchange at 25 to the gold sovereign at parity, has stood at 44. It is clear that the undervaluation of the zloty has been an important factor in favouring Polish exports as compared with those countries whose exchange is at par.

The Polish situation has already been examined in some detail, but it may be added that competition from this source is still strong. During September and October of 1927, Polish offers fell off, owing to the farmers being busy with harvest operations, but the intimations were that heavy shipments would shortly set in which would have the effect of keeping prices down to a low level until the end of the year. Although Poland has other markets for pork, considerable quantities being forwarded to Austria and other Continental consumers, surplus supplies are available for the English market. Considerable

English capital has been invested in this Polish industry. One large British wholesale firm not only controls the output, but has supplied the necessary capital to a Polish factory from which all their supplies for England are obtained. The extent of British investments in the Polish bacon industry cannot be ascertained, but there is at least one other factory controlled and operated in the same manner. It is important to bear in mind that the standard of living in Poland is very low, and while Polish money has lost in purchasing power, the cost of living in Poland did not increase to any great extent during 1927. It is evident that the Canadian farmer is heavily handicapped in meeting the competition of low standard countries such as Poland.

It has been calculated recently that it costs in the vicinity of 93/- to 97/- (\$22.62 to \$23.59, exchange at par) for first grade Danish bacon to be placed on the English market. Recently British prices have been around this figure, which tends to indicate that the Danes have been making little or nothing out of their English trade, which to them is vital. What grain is to Western Canada, bacon is to Denmark. The United States market has saved the situation for Western farmers; but Denmark has no such alternative outlet for its surplus supplies. The increasing trade in Russian, Polish, Latvian and Estonian bacon has had very serious effects on the level of agricultural prosperity in Denmark. The following table, prepared by Mr. Douglas Cole, Canadian Trade Commissioner at Bristol, summarises the price situation from January 1 to October 14, 1927:

BACON AND HAMS: PRICE COMPARISON PER Cwt. (112 Pounds), 1927.

Cuts	Weights	January 1	June 1	October 14
English singed sides	50/70	122 to 127 (\$29.68-\$30.90)	108 to 112 (\$26.27-\$27.25)	102 to 106 (\$24.81-\$25.79)
Irish singed sides	50/70	121 to 125 (\$29.44-\$30.41)	100 to 102 (\$24.33-\$24.81)	96 to 99 (\$23.35-\$24.08)
Danish singed sides	50/70	91 to 95 (\$22.13-\$23.11)	91 to 93 (\$22.13-\$22.62)	94 to 97 (\$22.86-\$23.59)
Swedish singed sides	50/70	88 to 91 (\$21.40-\$22.13)	84 to 85 (\$20.43-\$20.67)	93 to 95 (\$22.62-\$23.11)
Dutch singed sides	50/70	88 to 90 (\$21.40-\$21.89)	84 to 86 (\$20.43-\$20.92)	87 to 89 (\$21.16-\$21.65)
Canadian singed sides	50/65	84 to 88 (\$20.43-\$21.40)	82 to 86 (\$19.94-\$20.92)	Nominal
American singed sides	55/60	90 to 92 (\$21.89-\$22.38)	80 to 82 (\$19.46-\$19.94)	.....
Short-cut hams	12/14	108 to 110 (\$26.27-\$26.76)	96 to 98 (\$23.35-\$23.84)	93 to 96 (\$22.62-\$23.35)
Long-cut hams	12/14	110 to 112 (\$22.76-\$27.25)	102 to 104 (\$24.81-\$25.30)	98 to 102 (\$23.84-\$24.81)
Picnics	4/6	80 to 83 (\$19.46-\$20.19)	74 to 76 (\$18.00-\$18.49)	68 to 70 (\$16.54-\$17.03)
Estonian—				
Lean		74 to 76 (\$18.00-\$18.49)	76 to 78 (\$18.49-\$18.98)	86 to 88 (\$20.92-\$23.84)
Prime		72 to 73 (\$17.52-\$17.76)	70 to 74 (\$17.03-\$18.00)	84 to — (\$20.43-\$.....)
Latvian—				
Lean		68 to 74 (\$16.54-\$18.00)	76 to 78 (\$18.49-\$18.98)	No sales
Prime		66 to 70 (\$16.06-\$17.03)	72 to 76 (\$17.52-\$18.49)	No sales
Polish—				
Lean		70 to 78 (\$17.03-\$17.76)	75 to 80 (\$18.25-\$19.46)	84 to — (\$20.43-\$.....)
Prime		70 to 73 (\$17.03-\$17.76)	74 to 76 (\$18.00-\$18.49)	
Russian—				
Lean		60 to 68 (\$15.98-\$16.54)	70 to 74 (\$17.03-\$18.00)	82 to 84 (\$19.94-\$20.43)
Prime		60 to 60 (\$14.60-.....)	68 to 72 (\$16.54-\$17.52)	80 to 82 (\$19.46-\$19.94)

Attention has already been drawn to the demoralised condition of the English market during 1926-1927. By February, 1927, Continental exporters were losing heavily on consignments, and a determined effort was made to lift short prices. Demand for Danish bacon improved during April, and a ready sale was found for long sides of all descriptions. Danish killings were, however, over 90,000 pigs per week, which threw increased supplies upon the market. Canadian and American trade was dragging badly, and American hams were being held for more money. The price as between January and June, 1927, may be studied in the above table. From these figures it will be seen that English sides had decreased about \$3.40 per cwt., Irish by \$4.86, while Danish, Swedish and Dutch sides were not affected to the same extent. In the case of Canadian and American bacon prices were about the same, but owing to the heavy cost of production trade was very light. Some improvement took place in July and August, and continued into the middle of September. The end of that month found larger supplies of Continental sides coming to market, which could not easily be absorbed. It will be seen that the market had been characterised by depressed prices, and by the middle of October another \$3.65 per cwt. had been dropped from English and Irish supplies. As Mr. Cole points out, Continental supplies are shipped as sides, and many grocers, instead of buying separate hams, use the gammon instead of hams. This has had a considerable effect upon the trade in Canadian and American hams, by decreasing the demand for these products. The wholesale houses, of course, cut their sides and sell the product as backs, streaks, fore-ends, gammons, etc. Under the conditions that obtain, fluctuating prices occur for different parts of the side, as a wholesale house having done well with the backs and streaks may sell the remainder at lower corresponding prices, to clear. Mr. Cole gives it as his opinion that the borax regulations have definitely affected Canadian and American bacon trade in Great Britain. The multiple shops, with their huge demand, and the metropolitan trade can handle the Canadian business; but in the case of the small grocers in the provincial areas, with no refrigerating facilities at their command, it is evident that supplies can be purchased only upon a hand-to-mouth basis.

THE EXPORT DEMAND AND THE LOCAL MARKET PRICE.

As a rule, in any field of production, whether of grain or livestock, the local price is determined by such prices as can be realised abroad for surplus supplies. The Canadian price for wheat, for example, will rise to the level of the effective foreign demand, particularly in the British market. Under normal conditions, the same holds true for the prices of livestock, but more recently the American demand has been the decisive factor in making local prices. As is well known, the price of hogs in Chicago has been for the greater part of the last eighteen months the governing factor in determining prices on Western markets. During the same period, as outlined in detail above, depressed bacon prices in England have seriously affected the Canadian and American export trade to that market. Temporary causes may place

prices on Canadian markets higher than those in the United States, while at other periods the reverse holds true. Experience has shown, also, that prices on Western markets may sometimes be higher than on the Eastern markets in Canada; and again, the reverse may hold true. Within the Western area itself prices may fluctuate as between Alberta markets, the Moose Jaw market, and the Winnipeg market. The increase of population on the Pacific Coast has opened up a new and large outlet for Alberta hogs; and under certain conditions the markets of the Pacific Coast may govern Alberta prices.

It has already been made clear that the marketing of hogs is not a local question, but is influenced and affected by world wide trade. Briefly, local prices will be governed by fluctuations in demand and in supply, and by comparative freight rates, but the demand and supply referred to constitute the total demand and supply at basic market points. Thus, to understand price changes, it is necessary to analyse not only the local situation, but the British bacon market, and the United States market. The prairie provinces must dispose of their surplus hogs in external markets,—either in other parts of Canada, in Great Britain, or in the United States. The price at which the export surplus is sold, is decisive in determining the price for the entire supply, whether marketed locally, in other provinces of Canada, or abroad. There may be temporary departure from this rule, but such departures can be only temporary in nature.

For example, late in the summer there may come a period, which usually extends into September, when the local supply of hogs coming to market in the West scarcely meets the requirements of the Western trade in fresh pork. It is clear that at such periods local markets may become temporarily independent of outside markets, and that considerable discrepancies may occur even as among the local markets themselves. As has been pointed out by the United Livestock Growers, and others, in explaining the situation to primary producers, the price of hogs then becomes purely a local matter, and that price is limited only by what packers and butchers may be able to dispose of at a profit in the fresh pork trade. As the new fall hogs come to market, however, these local discrepancies in prices are ironed out, and then the price tends to conform with that received for the exportable surplus. During 1927, the Western local demand carried prices to a high level, because of the strong demand from the Coast points for Western hogs. Along with this development, prices were pushed still higher by a temporary scarcity of pigs, and a keen local demand for fresh hog products. Hogs in Winnipeg sold on September 19, at \$13.00 per hundred or \$3.00 per hundred higher than on the Toronto market on the same day. Two days later the Winnipeg price dropped to \$12.50, while at the same time in Toronto they brought only \$9.75 per hundred. Quotations at Calgary and Edmonton were somewhat higher than the Winnipeg price. It should be observed in comparing Western markets that Winnipeg and Moose Jaw prices are quoted on a fed-and-watered basis, Edmonton and Calgary on an off-car basis, while Toronto prices are quoted both ways. Off-car prices should be increased from 25c to 40c to bring them to a fed-and-

watered basis. These local differences in price cannot last long, otherwise hogs would move from the cheaper markets to those where better prices obtained. Farmers who are able to sell under local market conditions, at such periods, stand to gain; but it cannot be argued that those whose hogs are not finished for market lose an opportunity because even a slight increase in supply would reduce local price levels. For permanent production, and for farmers as a whole, these temporary local fluctuations may be left out of consideration.

For the greater part of the year the price of hogs in the prairie provinces is regulated by the exportable surplus. During the past two years the United States market has been the chief factor in determining Canadian prices; and Chicago prices, made in the greatest hog market in the world, chiefly determine what producers in Canada shall receive for their pigs. It may be added that Chicago takes from seven to ten million hogs a year, while the total marketed in Canada stands between two and three million a year. When the British bacon market was strong, prices for Western hogs were frequently higher than Chicago prices. The hog supply of the United States during such periods had an important effect on Canadian prices, because the American surplus was also marketed in Europe, and had a tendency to drag prices down. During the past year and a half, the American market, because of an under-supply, has drawn hogs from Canada into the United States, chiefly from Ontario and Alberta. It is clear that such a movement ultimately affected prices on every market in Canada, and ultimately, also, altered the relationship of the different markets to each other.

When the British market is active, hogs and their products move east and are worth more in Toronto than in Winnipeg, and more in Winnipeg than farther West, because of the factor of freight rates. Under these conditions the Winnipeg market will be normally \$1.00 per hundred under the Toronto market, and from 50c to 75c above the Alberta level.

When, however, hogs move to the United States, and the Chicago market becomes the governing factor, Western markets are affected not through Toronto but through Chicago. Since there is not a wide discrepancy between the cost of moving hogs from Winnipeg to the nearest United States market, and the cost of moving hogs from Toronto to points in the eastern United States, prices at Toronto and Winnipeg, under these conditions, will tend to approach the same level, while, as has been noted above, Winnipeg prices are usually \$1.00 below Toronto prices. The Chicago price is basic, because all other prices in the territory between Chicago, Buffalo and other eastern points are related to the Chicago price, and in turn Winnipeg and Toronto prices are also related to the Chicago price when these markets are on an export basis. When higher prices rule in eastern United States markets hogs have a tendency to move from Ontario points across the line. Hogs will be shipped from Winnipeg to the south also, unless the packers at Winnipeg require the available supply and are in a position to make bids sufficiently high to hold supplies for the domestic trade.

Pacific Coast markets have had an important influence, in the last eighteen months, on the prices of hogs at Alberta points and at Moose Jaw. The chief Pacific Coast markets are Seattle, Portland, Tacoma, and Spokane. As pointed out by the United Livestock Growers, in explaining the situation to their patrons, Alberta prices have been materially influenced by the fact that packers on the Pacific Coast have been unable to secure sufficient domestic hogs to meet the local demand, owing, among other reasons, to the increase of population in that area in recent years. "North Pacific Coast" packers have been searching for additional supplies to meet the demands of their market, owing to the fact that they must meet the competition of Chicago in procuring domestic hogs. Ordinarily Pacific markets can rise above the Chicago market by an amount which approximately represents the freight on packing house products from Chicago to the Coast. Under normal conditions it is more profitable to ship hogs to Chicago or Omaha than to ship west and get Coast prices, when producers are located east of a line drawn north and south throughout the Dakotas, Nebraska and Kansas. Pacific Coast packers, therefore, turn for additional supplies to Alberta, and also watch closely the Moose Jaw market, ready to buy when conditions are favourable. These conditions are favourable when prices in the United States are sufficiently above the Canadian level to pay the duty and freight on hogs from Moose Jaw, Lethbridge, Calgary, Edmonton and intermediate points. Canadian hogs, being closer to the bacon type than the pigs of the United States, tend to command a premium on the American market. United Livestock Growers have sold hogs to packers on Pacific Coast markets which cost them, landed, as much as 75c per one hundred pounds above prices paid for United States domestic hogs. It is clear that this westward movement can take place only when Coast prices in the United States are sufficiently above prices in Alberta and at the Moose Jaw market to cover freight and customs charges. At such periods the Chicago market will be above the Winnipeg market, and the price of hogs at Winnipeg will be governed by prices prevailing at Chicago, while at the same time prices in Alberta and Moose Jaw will be governed by market prices of hogs in Spokane. At such periods also, the price of hogs at Spokane will be higher than the market price at Chicago; and when all these factors are taken together, the price of hogs in Alberta will rule higher than the prices obtainable on the Winnipeg market.

One must bear in mind that it is not necessary to ship hogs from one market to another to get the advantage of higher prices; it is the possibility of such a movement that tends to harden prices. When the United Livestock Growers applied for and secured a reduction on the car load rates on hogs from Moose Jaw to Spokane to a basis corresponding to rates from Edmonton and Calgary, the Moose Jaw market advanced, even when no actual shipments took place. This was because bids were being received from Spokane packers who were constantly in the market, as well as other buyers. Canadian packers, to secure the hogs, had to outbid American buyers.

Under ordinary conditions, on such standardised commodities as hogs and hog products, there can be no great spreads between different markets. Such spreads as there are, are due largely to such factors as freight rates and customs charges. The great packing companies have plants at many strategic points, and are represented on important markets even when they have established no plants at such centres. Each packer has, to a certain extent, therefore, a choice of markets at which to secure supplies. The packers make a close study of each market, and naturally attempt to secure supplies in the cheapest ones. Thus it has come about that when the British bacon market ceased to be the chief outlet for Canadian supplies, prices at Chicago became the governing factor and exerted their influence at Winnipeg, and through Spokane and Portland, at Edmonton and at Calgary as well as at Moose Jaw.

The British Columbia market must also be given due weight in analysing price movements, particularly from Moose Jaw west throughout Alberta. From one point of view, British Columbia may be considered as an extension of the Alberta trading area. The local supply falls far short of meeting the requirements of the coast territory, due to its rapid growth of population following upon the development of its Pacific trade and commerce by way of the Panama Canal. The domestic demand, therefore, for Alberta hogs is a considerable one, when one takes into account the population of the two western provinces. Thus, prices in Alberta are sometimes on a domestic basis, while prices on other markets are on an export basis, governed by British or United States factors of demand. The United Livestock Growers prepared the following figures to show the relative demand from British Columbia and Pacific Coast points in the United States for Alberta hogs during the years 1924-1927. It may be added that these figures are not complete, as they show only the shipments passing through Calgary and Edmonton, and do not include the large shipments made direct to the United States from the Lethbridge territory.

YEAR 1924.

Edmonton and Calgary shipments of hogs to British Columbia	32,066
Edmonton and Calgary shipments of hogs to United States.....	491
	32,557

YEAR 1925.

Edmonton and Calgary shipments to British Columbia points	25,440
Edmonton and Calgary shipments to United States points.....	6,501
	31,941

YEAR 1926.

Edmonton and Calgary shipments to British Columbia points	29,693
Edmonton and Calgary shipments to United States points.....	25,779
	55,472

YEAR 1927 TO AUGUST 31.

Edmonton and Calgary shipments to British Columbia points	17,707
Edmonton and Calgary shipments to United States points.....	31,261
	48,968

It is probable that, during the autumn months, increased supplies of Western hogs will come forward; and these supplies will take markets off the domestic basis, and require outlets either to Great Britain or the United States. It is difficult to predict which of these outlets will be the more important in the long run. While hog markets in the United States have been increasing, they are still far below the peak of a few years ago. As explained before, the corn crop will have an important bearing upon the increase of American supplies. Competent observers are of the opinion that hog production is on the increase in the Republic. When the peak of production is reached, the United States will not only be able to satisfy its own requirements, but will have a surplus of hogs and their products for export. For the present, high prices for cattle and for beef constitute a factor of importance in sustaining hog prices, because pork is a cheaper food than beef.

It has been made clear that the low prices prevailing for hog products in Great Britain have been due in part to unemployment, and to the securing of heavy supplies of pork products from the Continent. Increased prosperity in Europe will tend to widen the market for hogs, and to decrease the export surplus that now goes to England. Emphasis should again be placed upon the fact that it is imperatively necessary to keep in mind the future importance of the British market for Canadian bacon. It is dangerous to relate production on the prairies to the requirements of the American market alone, as that market may witness as swift and as dramatic changes as have occurred in Great Britain.

POSSIBILITIES OF LIVE PIG SHIPMENTS TO GREAT BRITAIN.

Interest has been shown in the possibilities, with the bettering of conditions in the British market, of shipping live pigs to England. Curing facilities in that country, even in a year of abnormal pig production such as 1924, are more than adequate to deal with the supplies, and normally permit the handling of from thirty to forty per cent. more pigs than are received. Forty firms, which number includes all the more important establishments, have, in the aggregate, facilities to deal with 30,900 pigs per week, so that the margin of handling capacity which exists can be practically estimated.

The extent to which supplies from Great Britain and Ireland would fill the gap in the porker market, caused by the recent embargo on fresh pork from Continental countries, could not be estimated until the end of 1927, as sufficient time had not elapsed to determine the extent to which farmers would breed and feed for this market. It was expected, however, that, due to organised efforts now being made in Ireland, production for the 1927 winter porker market would be stimulated, and that there would be no deficiency of supplies. A small proportion, about

ten per cent. of the supplies of imported fresh pork from the Continent, took the form of carcasses of bacon weights, which were diverted mainly to bacon factories.

Pigs imported from Canada must be killed in a Foreign Animals' Landing Place, as required by the Foreign Animals' Order of 1910. The best criterion of the suitability of Canadian pigs to the English market is the price which they will realise. In the trial shipment of Canadian pigs, which was disposed of at Birkenhead, bacon pigs brought 20/- per score of 20 lbs. The average price for bacon pigs on the Birmingham market during the month of March, when the pigs were landed, was 20 shillings, 1.42 pence. Messrs. Marsh and Baxter, of Brierley Hill, Staffordshire, purchased certain lots of this consignment, and so far as information could be secured, they killed out well. For the time being, there is no possibility of placing live pig shipments in England on a paying basis. With the rehabilitation of the British market, it will be found advisable to concentrate on the exportation of the finished product.

CONTROLLING MARKET PRICES.

The problem of price control is one of the most difficult and important in the entire range of the industry. The extent to which the market was supported in the United States during the years 1917 and 1918 greatly stimulated production, and led to the most energetic action on the part of primary producers to increase supplies for the European Allies. The reaction, after the close of the War, was all the greater because of the demoralisation that followed the collapse of prices, and the consequent disappointment of the farmers who had made every effort to increase the supply. Before dealing with the various methods that have been suggested or actually applied to secure better returns for producers, a brief survey may be undertaken of the period during which prices were more or less controlled.

By 1917, a serious food shortage, especially of fats, began to make its effects felt, and in a large measure it may be claimed that the furnishing of pork products by the United States and Canada proved the salvation of the Allied fat supply. Canadian prices were naturally influenced by those obtained in the Republic, and it is, therefore, important that the situation that existed should be understood. The United States production of hogs decreased greatly in 1917 because of the discrepancy between the relative prices of hogs and feed, but this production was stimulated materially by the inauguration of a policy by the Food Administration, whereby a price ratio between corn and hogs was established. Later much misunderstanding and a good deal of bitterness developed out of this policy; but despite such an unfortunate outcome the fact is that the number of hogs under this régime increased from 60,000,000 in the fall of 1917, to more than 74,000,000 by January 1, 1919. During this period it was essential to exercise control of Allied military and naval purchases of United States pork products, to maintain a fair price level. Likewise there were agreements with some fifty American meat packers, large and small, by

which they undertook to maintain the minimum price for hogs at the principal markets. This was on the understanding that the packers would be supported by Allied and United States Government buying. Hogs were allotted to individual packers on the basis of the average number killed during the three years, 1915-1917. To prevent even the suspicion of profiteering, certain regulations were issued, under a Presidential Proclamation, which limited the profits of the large packers to 9 per cent. on the average capital. This was a needless precaution, since the total profits for 1918, while the control existed, were only 5.6 per cent., instead of the 9 per cent. allowed. In a most exhaustive treatise on price control, "American Pork Products in the World War," by Dr. Frank M. Surface, proof is given that, through patriotic motives, the packers gave full co-operation; and to such an extent was this carried that they held greater stocks of high priced products than sound business operations could justify.

When the Armistice was signed the Food Administration's campaign for hog production had proved a tremendous success; and the runs became so heavy that it was found impossible to maintain previous prices and ratio agreements. Mr. Herbert Hoover and the Food Administration made every effort to maintain prices by forwarding pork in volume to Europe for relief purposes, even although they were obliged to overcome obstacles placed in the way by some of the Allied Governments. Not only did this policy prevent the loss of millions of dollars to the United States hog industry, a loss that was taken later, but it also saved many lives throughout Europe. The short-sighted policy against sending food into Germany was abandoned, and this new market for the pork surplus was thrown open. Beyond any doubt whatever the United States Food Administration was a great constructive force during this difficult period, and contributed materially to saving the situation, desperate as it was, among the starving population of Europe.

Brief reasons may be given for the famous formula, 13 to 1, which was established to maintain the corn-hog ratio. On October 19, 1917, Mr. Hoover appointed a committee to investigate the cost of producing hogs; and it made its report, through Professor John Evvard of Ames, its chairman, on October 27, 1917. The committee recommended, in order to stimulate the production of hogs, a price which would return to the producer the equivalent value of 13.3 bushels of corn for 100 pounds of average hog. Further the committee stated "Chicago is a basic market for corn and hogs. Therefore, we recommend that Chicago be used as the basis in any price stabilisation." The report also stated that the ratio had been estimated on the basis of Chicago No. 2 corn and Chicago average hogs. This clearly meant that the Food Administration was in favour of a Chicago ratio of 13 to 1; and it was in this sense that the recommendation was accepted by livestock producers.

Unfortunately, the Food Administration found it was unable to maintain a real 13 to 1 ratio, and attempted to get out of the difficulty by stating that the ratio meant "13 times the average cost per bushel

of the corn fed into them." This new policy did not definitely state that a Chicago ratio was being used. Taking the two reports together, which deal with the situation, the conclusion is reached that the price ratio to be upheld should be a Chicago price for hogs against a "farm price" for corn. It may be agreed, perhaps, that under either ratio hog producers received a fairly good price; but the change in policy aroused widespread agricultural discontent. For example, at a meeting of the Corn Belt Meat Producers' Association, held October 22, 1918, it was decided "to insist that the hog-corn ratio adopted by the Food Administration, November 3, 1917, be carried out in good faith, in accordance with the original intent; and that all promises, direct or indirect, made by the Food Administration for the purposes of stimulating production, be made good in both letter and spirit." The farmers stated that they were willing to do all possible to furnish essential supplies to win the War and feed the population at home, but that they could not enter into further agreements unless the Food Administration secured the necessary authority to carry them out.

Thus, the greatest experiment in attempting to determine prices by agreement by co-operation between the Government, packers, and primary producers failed, because the agreement ran counter to fundamental economic forces. Perhaps the most valuable lesson that farmers were taught by this experience was the futility of attempting artificially to make market prices. It was demonstrated that the only profitable and permanent method of bettering conditions for producers was to be found along the lines of organisation, whereby supplies would be marketed in such manner as to take advantage of operating economic factors for the benefit of those who produced the commodity. It may be added, however, in all fairness, as Dr. Surface has pointed out, that despite the defects of the policy of price control, that policy prevented Europe from witnessing perhaps the greatest famine since the Thirty Years' War. The American relief work was, indeed, an important turning point in World History.

LIVESTOCK COMMISSION ASSOCIATIONS.

It is not necessary to enter into a detailed examination of the serious conditions that arose for American and Canadian farmers with the post-war collapse of prices in the livestock industry. It must suffice to say that sheer economic pressure forced producers to consider ways and means of perfecting marketing methods, so that a closer relation might be established between prices and costs of production. It is impossible to examine comprehensively every aspect of this movement, but a brief survey may be made of some of the important developments.

In the United States the National Livestock Producers' Association was organised to put into effect a national marketing plan outlined by the Farmers' Livestock Marketing Committee of fifteen, whose report was unanimously adopted by a National Conference of Producers on November 10 and 11, 1921. At this conference thirty-one

state and national organisations sent accredited delegates, who participated in the deliberations and adopted the plan under which the association was organised.

This National Livestock Producers' Association was, as the name denotes, an organisation national in scope and character. Its particular business was to carry on commercial activities for the benefit of primary producers—activities which naturally affected old customs and methods of procedure. Its programme, as stated by the association, may be briefly outlined as follows:

1. The organisation of co-operative livestock marketing agencies to serve the interests of all producers.

2. The establishment of competitive livestock marketing agencies at market points where such agencies already existed was not contemplated; that is, it is the aim of the association to co-operate or affiliate with all properly conducted co-operative commission agencies which conform to the National plan.

3. The association plans to carry on a broad campaign of education, which will stress ways and means to secure more orderly marketing of livestock. To do so it was proposed to secure dependable information on livestock and meat supplies, which information would be intelligently interpreted and put into use by livestock producers at livestock shipping and marketing agencies, that have a genuine desire to co-operate for the good of the whole. To carry out this programme it would be necessary to properly organise producers according to a strictly co-operative plan. Under this head, it was also stated that some regulation of conditions bearing on volume of production must be secured if orderly marketing was to be accomplished.

4. The association maintains that livestock marketing agencies, owned and controlled by livestock producers, have the same rights and privileges as other livestock marketing agencies at terminal markets.

As is well known, the marketing of livestock through centralised markets is characteristic of the United States and Canada, and no other country in the world has a system which in any way compares with it. It was the intention of the National Livestock Producers' Association to approve the essentials of centralised marketing, and to discourage attempts of packers and other slaughterers to buy their killing animals at any place other than such markets. To further this policy, commission companies owned and controlled by producers were organised, as it was considered essential to establish selling agencies at terminal markets. The charge was made that commission firms at all markets have increased faster than the volume of business warranted, with the result that commission charges tended to increase out of all proportion to the service rendered. It was further stated that the service rendered was not the chief factor determining the commission charge, but rather the necessities of a large number of men engaged in the business, and the expenses which they incurred. It was felt that the launching of commission houses, owned and controlled by producers, would assure stockmen that their special interests would be safeguarded. It was a requirement that the directors of these commission companies be

bona fide producers of livestock. It was believed that only such men would appreciate what producers require in the way of service, and give producers the assurance that the directors would see to it that such type of service was rendered. It was argued that livestock producers could accomplish much by having the right to make decisions respecting the way hogs and cattle were to be fed, handled, and sold. To this end, much could be accomplished by owning, controlling and directing the commission firm that handles livestock at market points. This policy does not involve anything of a radical nature, being in line merely with the programme followed by owners of factories and mines to control their output. In one sense, the farmer may be classed as a manufacturer; and that he is a producer of raw products cannot be denied. To the greatest possible extent, therefore, farmers, through co-operation, should perfect marketing machinery to control the sale of their products. The National Association placed emphasis upon the fact that co-operative commission companies could secure men of ability to take care of their business interests, just as readily as can the "old line" firms. By extending the organisation to touch all important markets, the industry as a whole could be placed on a national basis. The plan had the support of many national and state agricultural and livestock organisations, and of the American Farm Bureau Federation.

The central idea, under this plan, for marketing livestock, was to secure better regulation of the flow of cattle, hogs and sheep to market. It was argued that no merely local organisation could accomplish this object, but that it required the inauguration of a policy covering the entire territory. To secure the best possible results, it was essential to enlist the support of the great majority of livestock producers. By giving loyal support to such a co-operative organisation, farmers would be the better enabled to perfect their plans for developing further policies to control the industry. By reducing handling charges to actual costs, it is evident that larger returns can be secured at the farm. Under such a scheme, the initial costs, or "overhead," present the most formidable difficulty. After such costs have been met, additional business must result in decreased unit costs of handling; in other words, the greater the volume of business, the greater the earnings returned to producers. According to the articles of association, the duties of the association are as follows:

1. It forms the National Organisation for the various Commission Associations. As such it will be called upon to see that the methods and practices followed at the various terminal markets are the best possible, and are uniform as between offices.
2. It will be the connecting link between the various State and National Livestock Organisations, and the Commission Associations.
3. It incorporates, organises and assists in appointing the first board of directors of each new terminal Commission Association.
4. The association provides an accounting system and auditors for the Commission Associations.

5. It studies local livestock marketing methods, and lends its support to such methods as are in the best interests of producers.

6. It studies laws and regulations promulgated by the various governments; it examines livestock rates and tariffs in force, as well as those proposed, with the view of protecting the interests of producers.

7. It disseminates livestock statistics, market information, and other data of value to producers.

8. It studies, perfects, and attempts to put into operation a plan for the more orderly marketing of livestock.

9. It is constantly on guard not only to protect the interests of the industry, but to search for new opportunities for the betterment of that industry.

Under this plan, it was proposed to integrate the interests of primary producers, co-operative shipping associations, terminal commission associations, and the National Association. Individual producers and local co-operative shipping associations are the foundation upon which the co-operative commission companies are based. It was felt that farmers and shipping associations could not secure the largest possible returns for their products and have their livestock efficiently handled without producer owned and controlled commission companies. Once this point is granted it becomes clear that the commission companies of the various livestock markets must be tied together by a national organisation in order to secure a systematic and orderly programme of marketing. Thus the terminal commission associations are joined together through a national organisation. The funds necessary for operation are provided through membership fees. It is, therefore, not necessary to pay interest on capital stock before pro-rating earnings to shippers. The membership fee, which amounts to \$10.00, entitles the holder to the privileges of membership for life. The membership fee for a shipping association is based on the number of cars handled by it in the previous year. An association shipping from 1 to 50 cars in the previous year would pay \$50.00, while one shipping 51 cars would pay \$50.50. In other words, there is an additional 50c per car for every car over 50 shipped during the previous year. According to this an association shipping 100 cars would pay \$75.00. In the case of a shipping association which has not been in operation for an entire year, the minimum charge is \$50.00. It was explained that the membership fees were necessary to provide funds to secure men of ability to take charge of the business at terminal markets. It is also necessary to have money to finance the auxiliary stocker and feeder companies, in order to assure shippers of the full market price for their livestock under all conditions. The membership fees are placed in a surplus account. It goes without saying, that it is necessary to provide a suitable surplus each year in order to strengthen the work of the association. A member is entitled to the pro-rated earnings of the commission associations and the stocker and feeder companies, in proportion to the business he transacts with them. Membership entitles a farmer to trade with, and to share in the earnings of, any other affiliated company on any other market. There is no commission charge for buying stocker and feeder animals.

If a producer consigns directly to the commission association, he will have to take out an individual membership in order to participate in the earnings, although it is not necessary to have a membership in order to ship to it. The advice given to farmers is to ship their stock to the terminal commission association just as though they had a membership. Such stock will be handled and sold to the very best advantage, and whenever the earnings due are sufficient to pay for a membership, such will be issued; from then on, the farmer will be paid a full pro-rated share of the earnings.

It is important to notice that members of the commission associations are not forced to ship only to such associations. However, it is expected that the service rendered, and the advantages that accrue to farmers by handling their own livestock will cause them to patronise their own commission companies. The terminal associations will also accept from, and sell stock for, anyone whether members or non-members. Country livestock buyers are eligible to membership only when they are *bona fide* livestock producers. If they are not, they may ship to the commission association, but cannot participate in earnings to the full amount. To those who are not eligible for membership, earnings are refunded on the basis of one-half the amount paid back to members. The terminal commission associations make the same charges for handling stock as are made by the "old line" commission firms, with the exception that they do not charge any commission for purchasing stock for the farmer. Charges for yardage, feed, etc., are the same as made by other firms, except that no charge is made for "inspection." Also the association makes the straight car load rate commission charge, if a shipping association desires to pro-rate its own expenses, even though it requests that its stock be weighed according to ownership.

The chief advantages of this plan of marketing may be summed up as follows:

Producers secure the handling of their livestock at cost. Although the charges are the same as are made by "old line" companies, at the end of the year all earnings above necessary expenses are refunded.

A second advantage is that the producers will, by concentrating their shipments, be able to gain better control of them and so secure more orderly marketing. Members control the terminal commission associations by electing their own board of directors. It may be added that stocker and feeder companies are companies affiliated with terminal associations. These companies accept orders for cattle, hogs and sheep, whether stocker, feeder or killing animals. They also are formed for the purpose of protecting shippers to the commission associations, by furnishing competition whenever the regular buyers on a market show a tendency to stay out of the market. In other words, the stocker and feeder companies will always be present to see that all stock consigned to the commission associations bring their full market value. As observed above, the service of buying stock on order is furnished without charge. It is believed that a stocker and feeder company will be necessary at each terminal market. Earnings of such companies are

refunded on the pounds of cattle, hogs and sheep handled, and are paid only to those members whose stock has been purchased by the stocker and feeder company from the terminal commission association.

The stocker and feeder companies probably will not be able, it is thought, to pay expenses. Their principal business will be the buying of stock on order; and as there is no commission charged for this service there will be no income from this source. The only source of income would be the net profit made on animals bought and sold by them on their own account. These companies believe that they will more than get back the money which it cost them to buy stock on order through the fact that it will be later consigned to the commission company to sell, and that the commission company's business will be considerably increased because of this free service. There is a separate board of directors for the stocker and feeder company, and a separate manager. Where they make use of the same office facilities as are used by the terminal associations, they pay their proportion of the expenses involved.

MARKETING HOGS DIRECT TO PACKER.

Marketing hogs direct from farm to the packer will scarcely make a strong appeal to Western producers. Nevertheless, because it is an important phase of the marketing problem, the methods followed and the results secured may be briefly analysed, to put producers in a position to reach sound conclusions. Under any scheme of marketing the fundamental principle that the net value to the producer depends upon the quality of the product, and efficiency in marketing must be kept to the fore. Quality granted, the net return to the farmer will depend upon the total cost of delivering livestock from the farm to the slaughtering floor, and upon the bargaining ability of the producer. It is evident that improvements in the quality of the livestock produced, and the conditions under which it is marketed, should bring better returns to the farmer. Efficient handling, stronger bargaining ability, and the return to the producer of the increased value of improved quality, must be factors of decisive importance in any marketing programme. It may be added that the future of any marketing association must depend entirely on its ability to render a superior service, to handle livestock efficiently, to strengthen the bargaining ability of farmers so that the greatest possible proportion of selling price will be returned to the primary producer. Because of its unique organisation, and the attempt to put into practice the above principles, a brief explanation may be given of the structure and achievements of the Eastern States Company, an organisation formed to market livestock direct to packers.

The Ohio Livestock Co-operative Association and the Producers Co-operative Commission Associations of Buffalo, Cleveland, and Pittsburgh established and operate the Eastern States Company, a producer owned and controlled co-operative organisation which merchandises livestock directly to slaughterers. This type of livestock marketing organisation is not in competition with other co-operative agencies, but is supplemental to them. It is intended as another piece of co-operative livestock marketing machinery, designed to correlate its activities with other marketing organisations in order to more efficiently market live-

stock. After two years' operation, this company merchandised directly to packers, livestock to the value of about \$3,000,000.00. Of this amount of business, 66,000 hogs were concentrated by county co-operative associations, and were then sold on the basis of yield direct to some twenty-two eastern packers, including both independent slaughterers and some of the largest packers in the country. The Eastern States Company quickly secured on a co-operative basis the merchandising of hogs direct to packers. In 1925, 32 per cent. of hogs marketed in Ohio went direct to packers, and of this total the Eastern States Company marketed approximately 8 per cent. In 1926, the percentage handled by the company greatly increased, indeed to such an extent that in the first half of the year it represented an increase of 100 per cent. over the corresponding months of 1925.

Those in control of the organisation maintain that there are two outstanding reasons for the almost immediate and phenomenal growth of this type of marketing hogs,—the increased price received by producers, and the opportunity afforded them to merchandise hogs on the basis of quality. An effort is made to minimise the cost of moving livestock from farm to slaughterer, to strengthen bargaining ability, and to reflect grade back in an increased price to the individual producer. The Eastern States Company, according to Mr. F. G. Ketner, general manager of the concern, incorporates the principle of centralised selling, and decentralised or direct shipping. It saves for producer and packer what are regarded as needless expenses at terminal markets, and the extra local freight and handling costs involved, while preserving for the producer the benefits of centralised selling. In direct shipping, as practised throughout other parts of the corn belt, the price, weight, grade, and dockage of hogs are determined exclusively by the packer after the animals are in his possession. In centralised selling and direct shipping in Ohio, the price, grade, and weight are determined before the hogs leave the concentration yards. The sale is made to the packer on identically the same terms as at market, but the hogs move direct at a saving of from 15 to 40 cents per 100 to the farmer. It is maintained that hogs moving direct from concentration yards to packers net the producers slightly more and cost the packers slightly less, than the same hogs moved through a terminal market. It is argued that under existing conditions, and with the utilisation of the proper organisation this is a logical and economical method of merchandising hogs.

As Mr. Ketner points out, it was a practice in the past for farmers to deal directly with individual butchers or killers. With the gradual development of the packing industry, enormous industrial interests were developed, and close to those interests were also developed terminal markets. Livestock went through them on a direct route to the packer with little loss of time and little, if any, extra expense. Conditions today are somewhat different. Killing is no longer necessarily centralised around the stockyards. In addition to the great packers, there are now in the United States many independent packers; in all some 525 packers in the year 1925. It, therefore, follows that a large proportion of the hogs now going to terminal markets must be reloaded

and shipped to other killing centres. It is calculated that in 1925, 66 out of every 100 hogs shipped to the St. Louis market, after expensive handling and feeding, were reloaded and shipped to eastern slaughterers. During the same year, 3,000,000 of the hogs received at the Chicago yards were reconsigned. It is claimed that the additional costs incurred by farmers by this practice, at the Chicago market alone, were upwards of \$1,000,000.00. Similar figures might be given for the Indianapolis market, for the South St. Paul market, and for other markets. In fact, more than 12,500,000 hogs, or over 34 per cent. of the total hog receipts of the twelve major hog markets in 1925, were reloaded and shipped on to the packer, causing large sums of money to be deducted from the returns that ought to have gone to producers.

Obviously direct-to-packer marketing will fluctuate according to conditions of supply and demand. Generally it increases in periods of light hog production, and decreases in periods of heavy hog production; but in the ten leading hog states of the corn belt, the percentage of hogs going direct to packers has gradually increased during the past six years. Mr. Ketner makes the statement that the percentage of hogs being marketed direct to packers from the corn belt is increasing rapidly, and that it is so increasing because producers, buyers and slaughterers are turning from terminal markets to more economical methods of marketing and securing hogs.

In Ohio, leaders in the livestock industry recognise in this evolution of marketing an important means for providing for price determination. The argument runs, that the meeting of supply and demand in an open, unrestricted, competitive market is the best method of determining fair prices. It is also argued that the principle involved in establishing central markets for the merchandising of livestock is fundamentally sound, and that the central market should remain to perform its functions as a price determining centre. While prices may be determined in the central market, it is contended that less of the value of the farmers' livestock should be consumed there. Supply and demand should meet under conditions where values may be determined more economically and intelligently, and at much less cost per unit to producers and purchasers. It is pointed out that livestock is the only bulky, perishable product that is now assembled at price determining centres. Prices of butter, cheese, fruits, grains, and numerous other agricultural commodities, like those of other industries, are made at market centres, but the commodity itself may be at point of origin or in direct movement from point of production to point of consumption. Mr. Ketner is of the opinion that just one thing needs to be done in the livestock industry in order to apply the same effective method of pricing livestock; that is, the establishment of definite uniform livestock grades. With such grades established, hogs classified at assembling yards according to grades could be sold at an established central market, but the hogs would move by the most direct route from farm to slaughterer. This practice would result in a saving to the producer, slaughterer, and consuming public, annually, of millions of dollars at present expended for unnecessary freight, feed, yardage, speculative margins, and handling costs. To be sure, competition as between

buyers is essential, but that competition can be secured not only at terminal markets or stock yards, but at packing plants. It is argued that the data respecting the supply and demand can thereby be more readily determined and used; and that increased amounts of livestock will move direct from farm to packer with great saving to each, and that the movement of livestock will be more uniform and prices receive better support.

With respect to applying this programme to Canada, it is clear that it would be difficult to assemble hogs locally in sufficient numbers properly to classify and grade them, and that, therefore, a large part of the supply must move to established terminal markets. In addition, hogs must move in volume to terminal markets near which packing plants have been established, in order that packers may secure supplies. Thus it appears, that in the United States, and certainly in Canada, the terminal markets will always have an important place in any livestock marketing programme.

At the same time, the principle of rewarding the producer according to the quality of his product, is sound. For that reason, the identity of his product must be retained. It is equally clear that in the movement of hogs direct from the farm, or local assembly points, to packers, the identity of the individual producer's product can be secured.

The actual value of a hog is determined by the quality and weight of the dressed carcass. Packers attempt to determine the prices they will pay on this basis, whether buying in the market or in the country. It is possible to incur heavy costs at terminal markets by feeding, which does not add to the value of the pigs, and which adds heavily to the expense of producers. The Eastern States Company takes the position that each year livestock producers buy train lots of unnecessary feed at terminal markets, and that the disposition of this same feed adds greatly to the cost of slaughtering. Under the plan as outlined above, Ohio livestock producers are attempting to sell on the basis of yield, and to make this feasible through direct shipments to packers. Furthermore, this policy is designed to enable producers to meet centralised buying with centralised selling, and to reflect grades back directly to farmers, which results in improvements of the quality and condition of hogs marketed. A serious difficulty in the way of applying these principles to the marketing of Canadian hogs might be found in the effect on market prices of the withdrawal of packers' support at a time of heavy deliveries. If packers are eager to buy directly from shippers when supplies are light, and turn to the market only when supplies come forward in volume, and when it is an easy matter to fill their requirements, no serious consequences may ensue. Manifestly, support is most required when the market is under pressure. Packers may or may not turn to the market under these conditions, but continue to buy a large part of their requirements from producers. The collapse of prices at central markets may be much greater than in proportion to the withdrawal of packer buying. In turn, depressed prices at central markets will be sooner or later felt in

the price paid by packers in their direct purchases from primary producers. As long, therefore, as prices are basically determined at strategic market centres, every effort should be made by the producer to support those markets. To the extent that economies can be achieved by shipping direct from country assembly points to slaughtering plants, such economies should be secured, but always with the proviso that the buying and selling shall take place at the market centre. The support of the market, in the long run, is fundamental in assuring farmers the greatest possible returns for their products.

EARLY METHODS ADOPTED BY PRODUCERS.

In the early days in Saskatchewan the rancher was, generally speaking, the only producer who was in a position to market his stock to any advantage. With the growth of mixed farming, the problem of how to perfect marketing methods for the average farmer, in the disposal of his livestock, became important. Undoubtedly, he was working under heavy disabilities, and depended largely upon the local buyer or drover to provide a link between the farm and the market. Drovers carried on this business in many instances on a fair and reasonable basis, especially when they expected to remain permanently in the business and to establish a clientele of satisfied customers. On the other hand, "outside buyers," as they were termed, frequently made trips through the various districts with the object of picking up bargains. Owing to the lack of organisation, and the even greater lack of market information, individual farmers found it difficult, if not impossible, to secure reasonable terms for their livestock from this class of buyers.

The drover is usually a better judge of livestock than the farmer, as far as market values are concerned, and frequently got the better of the bargaining process. Farmers, therefore, began to organise in a local way, and small groups would band together to ship their livestock to the nearest market, in carload quantities. Briefly, out of these humble beginnings, the plan of developing co-operative livestock shipping associations was worked out. These small locals did good work, and were able to bring considerable economic pressure upon the drover, which resulted in better prices. In some cases, drovers agreed to ship cattle on a commission basis rather than lose the business. Often farmers would secure information from the local shipping agent concerning prices of livestock, and thereupon do business with the drover. Where the farmers learned to co-operate, the drover gave up his business of local buying, and often acted as shipping agent for the local association.

An outstanding result that followed the organisation of co-operative shipping associations, was the increase of return that came to the individual farmer who was now placed in a position to command the same price as those farmers who could ship in carload quantities. These farmers also learned that it was better to retain their animals, and to ship in carload quantities, than to permit drovers to take the pick of their stock, and then find themselves in the position of having

to dispose of the scrubs at a sacrifice. By combining shipments with other farmers, an opportunity was presented for making comparisons—an educational feature of importance, further strengthened when cash payments disclosed the judgment of the market respecting the qualities of the different shipments.

In the difficult period following the War, under the pressure of high cost of production and falling prices for the product, producers began to search for better methods of disposing of their livestock. It became clear that a further development was necessary in the marketing process. Following up many preliminary conferences, and careful examination of the entire problem, a new organisation was launched to handle livestock, and to market it through a central selling agency. Thus there came into being the Saskatchewan Livestock Co-operative Marketing Association, Limited, with membership placed on the contract basis.

CHAPTER XIII.

PRODUCTION PROBLEMS IN CANADA.

Canada can achieve success in catering to the demands of the British market, by producing uniform supplies along with a product of high quality. One of the chief difficulties with which Canadian packers have been confronted, has been the great discrepancy between monthly deliveries throughout the year. When it shall become necessary again to enter the British market in volume, the production of uniform supplies will become of basic importance. Much has been said of the handicaps under which Canadian farmers labour in meeting Danish competition, climate and costs of production receiving, in this connection, considerable emphasis. Undoubtedly climatic conditions favour the Danish producer, as in some respects Denmark may be regarded as a geographical extension of England, the differences in temperature presenting no serious problem in moving the product from the farm to the consumer. The climatic factor is a serious one for Canadian packers, who must move supplies over long distances both by land and water, making it difficult to preserve the delicate flavour of bacon and other products. On the other hand, the climate of the West has been favourable to the production of hardy livestock, free from disease. Foot and mouth disease is unknown, while in Denmark and other European countries this and other diseases lay heavy burdens upon producers. From this standpoint of production costs, it is doubtful whether climate favours, to any considerable extent, Danish producers. Careful studies made by Professors Wade Toole and R. G. Knox of the Ontario Agricultural College, as well as by other agricultural experts, go to demonstrate that good bacon hogs may be produced economically either in summer or winter in Canada. To be sure, care and feeds may be provided at less cost in the summer, but the additional winter costs in their relation to profitable production present no serious problem. As is pointed out by the experts referred to above, winter feeding both in the United States and Canada can be carried on under favourable conditions. In the Middle Western States large numbers of hogs are fed in winter in open corrals with only improvised shelters. An experiment along these lines was conducted at Guelph for four years to show the relative economy of gains in six breeds fed outdoors with only open shelters for the hogs. One of the conclusions reached was that pigs must weigh about 100 pounds before they will stand the rigours of an outdoor run in winter. Professor Toole was of the opinion that young pigs just weaned will not make satisfactory gains outdoors from late November to late March, but where the pigs are farrowed fairly early in the fall and have reached 90 to 110 pounds in weight, they will do well in outside lots, if they have a dry shelter in which to sleep. Such shelters should be open, so that the pigs may go out and in at will. In the winter of 1925-26, a number of pigs fed outside were compared with a similar number of pigs fed inside. Both lots made a profit over the cost of feed, but those fed inside made

slightly higher returns than those fed in the open. This leaves out of account the cost of housing, which if taken into account would have made the costs approximately equal. The following tables show the results:

MEAL REQUIRED FOR 100 POUNDS GAIN.

	Outside feeding	Inside feeding
Yorkshires	421.6 lbs.	377 lbs.
Tamworths	395 lbs.	346 lbs.
Berkshires	339.6 lbs.	276 lbs.
Average	385.4 lbs.	333 lbs.

MEAL AND MEAL EQUIVALENTS FOR 100 POUNDS GAIN.

	Outside feeding	Inside feeding
Yorkshires	569.2 lbs.	532 lbs.
Tamworths	549.2 lbs.	480 lbs.
Berkshires	464.9 lbs.	386 lbs.
Average	527.7 lbs.	466 lbs.

NOTE: Skim milk was fed with the meal and in this table is brought to meal equivalent.

PROFIT OVER COST OF FEED.

	Outside feeding	Inside feeding
Yorkshires, per hog	\$6.12	\$7.17
Tamworths, per hog	6.68	6.67
Berkshires, per hog	7.96	8.58
Average	\$6.92	\$7.47

A further interesting experiment was carried on at Guelph during the winter of 1925-26, when a feed test was made to determine the comparative economy of pork production between pure bred hogs of the three recognised bacon breeds, and the respective crosses of the same breeds. The following hogs were used in the trial: one pen each of purebred Yorkshires, Berkshires and Tamworths, Tamworth-Yorkshire crossbreds, Yorkshire-Berkshire crossbreds and Tamworth-Berkshire crossbreds. In conducting the experiment hogs of fairly uniform size and age were selected. All pens were given the same treatment and were fed the same rations at the different stages of growth and finishing and, as far as possible, marketed at the same weight. The following exhibits briefly show the results secured:

	Pure-bred	Cross bred
No. of lbs. of meal required for 100 lbs. gain	333.3 lbs.	352.3 lbs.
No. of lbs. of meal or meal equivalent required for 100 lbs. gain	466.0 lbs.	506.3 lbs.
Average daily gain per hog	1.66 lbs.	1.23 lbs.
Average profit over feed consumed per hog	\$7.14	\$4.94

NOTE: These hogs were fed skim milk and mangels along with the grain, and supplements are expressed in terms of meal equivalent.

These animals, when graded on foot, showed the same number of selects in the crossbred lots as in the purebred lots, but, on the rails, while there was only a slight preference for the purebreds as far as depth and uniformity of depth of fat down the back was concerned, the size and evenness of the belly streak in the carcasses of the pure-

breds was decidedly superior to that of the crossbreds. Moreover, as a lot, the carcasses of the purebreds were better balanced than those of the crossbreds.

Professor A. M. Shaw, Animal Husbandry Department, University of Saskatchewan, draws attention to the need of giving every care to the sow and her litter, if profitable production is to be secured. In Bulletin No. 6, of the College of Agriculture, this aspect of production is exhaustively examined. Professor Shaw states that if the sows are given access to a straw stack, no other shelter will be required, the sows preferring this form of shelter to any other that can be provided. If no straw stack is available a satisfactory shelter can be made by setting posts in the ground at intervals, to form an inclosure of any desired size. Woven wire should then be stretched around the posts, and sufficient poles and wire over the top to form a roof. The top may then be covered with straw, and the inclosure may be banked up with manure. A small opening about three feet wide should be left in one end always to be left open so that the sows may come and go as they like. There should be plenty of bedding, so that the animals can cover up well during extreme weather. Professor Shaw states that the great advantages of this kind of shelter are that it is cheaper, warmer, and much better ventilated than any other kind except a straw pile. Attention is drawn to the necessity of forcing the sows to take sufficient exercise during the winter time. If only one or two are kept and given the run of the barnyard, they will usually find enough exercise in working over the manure in the yard. If they cannot be kept there, however, or if large numbers are kept, the best method is to feed them fifty yards or more from their sleeping quarters. In this way they are forced to walk a certain distance each day. In summer, access to paddock will be all that is necessary to provide proper exercise. Young pigs will require shelter from the elements in the early spring particularly, when they are first turned out to the paddocks after weaning. An "A" shaped colony house, straw shed, or in fact any sort of small building will answer the purpose. Professor Shaw regards this as important, because if no shelter is provided the young pigs will fail to thrive, and instead of gaining will frequently become stunted and unthrifty. Moreover, pasture or its equivalent is necessary for the best development of young pigs. During the growing period, say from three to six months of age, a large amount of protein is required. This can be furnished in various ways, but the best and cheapest way is to provide the pigs with plenty of green succulent food. They may get it by having the run of a small pasture, or green feed may be cut and fed to them in the pens. Under pen conditions, of course, young pigs must have access to a tonic mixture, because it tends to promote growth by furnishing mineral matter required in considerable quantities by the growing animals.

FEEDING GROWING PIGS.

In Denmark, pigs are much more closely confined, so far as personal observation went, than in Canada. Danish agriculture is con-

ducted on a highly intelligent basis, but nevertheless it is small scale agriculture, in which the farmer and his hired help give unremitting attention to the feeding and care of the livestock. In a sense it follows the routine of machine industry, with regular hours, highly organised production, and high specialisation. On the much larger farms of the West, where grain farming is the outstanding feature of production, it is probably impossible to secure the same sort of detailed attention to livestock production as obtains in Denmark. In fact, one of the executive officers of the Danish Co-operative Trading Company in London hazarded the suggestion that Canada could not hope to compete with Denmark with respect to introducing the routine of pig production, feeding and finishing, under careful personal supervision. One must not overlook the fact that a trained labour supply is also available for Danish farmers, and that this labour supply has been educated over a long period of years for specialised production. On the other hand, Denmark must import large amounts of feeding stuffs, and must organise production primarily from the standpoint of maintaining the fertility of the soil. While some observers have drawn attention to the fact that co-operation has lifted many burdens from the backs of individual producers, and that machine production is characteristic of Danish agriculture, nevertheless personal observation demonstrated that almost infinite care and attention have to be lavished on the small acreage, and sustained attention given to the farm as a productive unit. Indeed, contrary to statements made in some quarters, personal study of Danish agricultural organisation goes to show that regular, systematic, sustained and highly intelligent labour and management are outstanding factors explaining, in part at least, Danish agricultural achievement.

Western farmers have considerable advantages, then, over the farmers of Denmark. Because of the size of Western farms, machine production can be more economically and profitably undertaken, and horses, implements, etc., used for longer periods and more profitably. Western farm lands are cheaper and more fertile; Western farmers can, or should, produce practically all essential feed stuffs. As noted above, climate represents both advantages and disabilities to Western agriculture; but in the matter of clean, disease free, healthy and vigorous livestock, climate is of tremendous significance to the West. Indeed, only personal observation in such countries as Holland, Denmark, Poland, the Baltic States and Russia can bring home the appalling nature of foot and mouth and other diseases, and how heavy are the costs imposed upon European agriculture in combating them. The importance of this factor cannot be over-estimated, since, as already observed, the British embargo against the importation of live animals from the Continent was based upon the prevalence of foot and mouth disease there.

At the same time, Canadian farmers can learn much from Danish methods of production and distribution of farm products. Denmark has shown that profits from raising pigs depend in very large measure upon the success attained in caring for the brood sow and her litter, and the young pigs from the time of weaning until they are moved to

the packing establishment. Danish farmers, aided by experts, have given the greatest attention to proper methods of feeding and finishing, with the result that they have practically eliminated those faults which still place heavy burdens upon the Canadian producer. They have learned that it does not pay them to feed pigs too long, because overweight pigs make less economical gains than pigs carried to, say, 200 pounds. They have made special studies of feeding just before and after weaning, and have learned to avoid pushing pigs on heavy fattening feeds such as barley, buckwheat and corn, too soon after weaning. They know how to grow the pigs on protein-rich feeds and finish them later. On the other hand the Danish farmer understands that pigs starved or stunted in early life, or held until too old, become coarse and rough before they come to market weight. Danish farmers have, individually, a sound knowledge of what the properly finished bacon hog should actually be.

Professor Wood of Manitoba Agricultural College has gone thoroughly into the problems arising under feeding in the West. He draws attention to the fact that young pigs gain more rapidly and eat more food for their weight than any other farm animal. Thrifty pigs, given a satisfactory ration, should double their weight the first month after weaning, and makes this gain largely through the growth of bone and muscle. Because of this factor of rapid gains, young pigs, if given unsuitable feeds, are more easily stunted than any other kind of farm stock. Professor Wood further draws attention to the fact that, to be thrifty and healthy, young pigs must be kept in clean, dry, comfortable quarters. Pneumonia and digestive disturbances frequently follow the keeping of pigs in drafty, damp and filthy pens. Parasites, which cause heavy losses in some areas, increase rapidly if proper attention is not given to cleanliness. In his opinion, manure from the yards surrounding the piggery should be removed, and too many pigs should not be crowded together in one pen.

Professor Wood urges the use, as far as possible, of home-grown feeds. Under exceptional conditions, it may be found profitable to use a little purchased feed to balance the ration. With barley and oats for concentrates, together with a suitable pasture and some skim milk, little else is required in the way of a feed. When skim milk is not available, he recommends the purchase of some high protein substitute, such as tankage, at least for the first two months after weaning. Tankage, like skim milk, is high both in protein and mineral, and makes a good substitute for skim milk, when it can be secured at a reasonable price. Professor Wood, in a test conducted in 1923 to determine the feeding value of tankage, states that a group of nine pigs sold for \$29.57 more than another lot of the same size, getting the same mixture of grain but no tankage. The cost of feeding the tankage lot was \$6.34 higher, leaving a margin of \$23.23 in favour of the tankage group. He draws attention to the fact that when a supply of skim milk is available, there is no advantage in using tankage. Where a supply of green feed or where pasture is available, the cost of producing pork is greatly reduced. Pasture, as already mentioned, is one of the cheapest sources of protein, and helps to balance the grain ration.

Alfalfa is one of the most nutritious pastures, and where it can be grown provides good feed for young pigs. Professor Wood suggests the following as satisfactory gains for pigs on a suitable ration of grain and pasture:

2 months of age.....	30 pounds
3 months of age.....	60 pounds
4 months of age.....	95 pounds
5 months of age.....	135 pounds
6 months of age.....	160 pounds
7 months of age.....	230 pounds

Of course, it is possible to obtain more rapid gains, by forced feeding, but too rapid gains frequently destroy the conformation of the animal, and reduce the grade most in demand by the market. Professor Wood presents the following table for suggested rations for pigs at different ages:

SUGGESTED RATIONS FOR FEEDING PIGS AT DIFFERENT AGES.

(This table is not intended to indicate the quantities of feed to be given during each month, but rather to show the proportions in which the various ingredients are to be blended.)

First month after weaning	{	40 lbs. sifted oat chop, middlings or shorts. 30 lbs. barley chop (finely ground). 30 lbs. oat chop (finely ground). 300 lbs. skim milk or 10 lbs. digester tankage
---------------------------------	---	--

NOTE: If the oat chop is poor, reduce the amount and increase the quantity of sifted oats or middlings.

Second month	{	30 lbs. sifted oats, middlings or shorts. 40 lbs. barley chop (finely ground). 30 lbs. oat chop (finely ground). 250 lbs. skim milk or 10 lbs. digester tankage
-----------------	---	--

Third month	{	60 lbs. barley chop. 40 lbs. oat chop. 200 lbs. skim milk or 8 lbs. digester tankage
-------------	---	--

Remainder of feeding period	{	70 lbs. barley chop. 30 lbs. oat chop. 150 lbs. skim milk or 5 to 8 lbs. digester tankage
-----------------------------------	---	---

NOTE: Green feed should be provided during the entire period, also a supply of clean, fresh water.

Mr. J. B. Spencer, Livestock Branch, Ottawa, states that there is little room for deviation from accepted practice in the feeding of young pigs. A bone-building ration with low percentage of fibre is necessary, along with ease of digestibility. He suggests that wheat middlings and skim milk, with middlings, sifted oats, a little corn, and skim milk after weaning, will form excellent rations. Skim milk is almost a necessity. Three years of experimental work were carried on at Ottawa to find a substitute, and tankage, oil meal, and skim milk were the chief foods tried. Tankage proved a poor substitute where it directly replaced skim milk, both from the standpoint of cost and the quality of pigs produced. As an addition to a ration containing skim milk, it was inferior to oil meal. In fact, Mr. Spencer states that no

benefit could be seen in adding this expensive meat byproduct to an already balanced ration. While skim milk and corn or barley gave consistently better results over corn, tankage and water, they also showed a slight superiority over corn, tankage and milk for weaned pigs.

Mr. Spencer argues, however, that tankage may be regarded as a milk substitute. Best results have been obtained where pigs were weaned without milk by supplying the meal dry in a self-feeder, part of which was partitioned off and filled with dry tankage. Water was supplied at all times. Experiments in Brandon with the feeding of tankage to young pigs, showed the great value of skim milk, but tankage proved a good substitute. Grain only produced gains at a cost of 9.8c; grain plus 16 per cent. tankage, 7.1c; and grain plus skim milk, 6c. Tankage has been proved a profitable balance to corn, a grain which, to secure economical gains, must be fed with some protein supplement. A summer pasture of alfalfa, clover, or a spring sown grain or grain mixture will give cheap, home-grown, self-harvested feed for growing pigs. As to the stock carrying capacity of the crops mentioned, an acre should pasture from 10 to 15 hogs in the growing season. The economy of pasturing was strikingly shown in one experiment conducted at Lacombe, where the cost per 100 lbs. gain in paddock feeding was \$5.30. The average cost to produce, with six groups, each pastured on the different crops mentioned, was \$3.54. Skim milk for the growing hog is probably the best single food. For light growing hogs, 60 lbs. and over, 400 pounds of skim milk have been shown equal, on the average, to 100 pounds of meal. Mr. Spencer draws attention to the danger of overfeeding skim milk, which must be used carefully, not only to prevent the waste of valuable feed, but to prevent disaster overtaking the pig as well. A study of experimental evidence would show that, for the best results with young pigs, 1 pound of milk to 2.5 or 3 lbs. of meal should be fed. A greater proportion of milk will disclose decreased value as a meal substitute. For older hogs less milk may be used, experiments at Ottawa indicating that for the 100 pound hogs and over not more than five pounds should be fed daily. Because of the importance of milk and its byproducts for profitable hog production, it is easy to understand the significance of the development of the dairy industry in Western Canada. In Denmark, dairying lies at the foundation of the swine industry. Hence, provided dairying and pig production can be made profitable to the producer, not only will diversification of agriculture be encouraged, but much also will have been done to secure stability and uniform employment throughout the year in Western agriculture. Manifestly, this phase of the problem has an important bearing upon providing farmers with trained hired help, in sufficient volume to meet their needs. One, however, is forced to reach the conclusion that such desirable results depend mainly upon giving producers reasonable assurance that dairying and swine production will prove profitable. A sound productive system may break down, if marketing is not likewise developed to secure for producers the best possible returns for their labour and sacrifice.

Professor Wade Toole has drawn attention to the fact that softness is one of the chief causes of loss in Canadian bacon; and further, that all soft bacon sells at a discount. Pigs fed heavily in early life, particularly on fattening feeds, and at the same time closely confined in pens without exercise, produce a soft bacon. Experimental work conducted at the Ontario Agricultural College appears to prove this contention, as well as the fact that pigs grown to 100 or 125 pounds weight on mixed feeds, well balanced with skim milk or tankage, and finished on corn or barley, will produce a firm, high quality product. Close confinement in pens from weaning until marketing has a tendency to produce a soft, flabby product. Dairy byproducts may in part offset the trouble arising from lack of exercise but both exercise and skim milk are better than either alone. Observation in Denmark showed that pigs are generally closely confined, in large, airy, well ventilated and clean buildings, but that they receive little or no exercise and feeding in the pasture. Much has been made of the effects of permitting Western pigs to run outdoors, it being claimed that there is not only greater danger of injury, but that the animal becomes too muscular. On the other hand, the Danish practice is made possible in part by the close relation of the swine industry to dairying, and because of what may be termed the "factory" type of farm.

Professor Toole has advanced the opinion that feeding corn alone for an extended period produces poor gains, and a soft, undesirable carcass. Barley and oats produce a firm, satisfactory bacon. Extensive experiments have been conducted to show that roots and grain feed, including pasture, clover and rape, have no injurious effect upon the quality of the bacon. He also has stated that in summer finishing, for the last month or two, more rapid gains are made where green feed is conveyed to the pigs inside, instead of allowing the pigs to graze; but this practically doubles the amount of work involved. Exercise and thrift go together, and thrift and firmness of flesh are inseparable. Professor Toole has indicated that feeding on meal alone has a tendency to produce soft bacon, and the mixed feeds are, therefore, safer. Certain oily byproducts should not be fed in large quantities, but only as a small portion of the ration. Exercise, rapid growth from weaning up to the finishing age on a mixture of feeds, and a satisfactory degree of finish evenly distributed, make for quality of product. Starving, stunting, crowding with heavy feed when young, lack of variety in feed, and holding for a higher market, all make for a low-grade product. Professor Toole further has argued that it costs no more to put a pound of gain on a bacon hog, than upon a lard hog, and that the right kind of bacon pig will make gains as cheaply as the lard breeds. Some years ago experiments were conducted at the O. A. C. with six different breeds of swine, and the results indicated that the bacon breeds held their own with respect to economy of gains. Over this five year period Yorkshires stood first as to suitability for export bacon, with Tamworths second and Berkshires a good third. The other three breeds proved unsuitable for the export trade. With good feeding it requires approximately 400 pounds of meal, or its equivalent to produce 100 pounds gain; and it is well to remember

that there is very little difference between costs of gains with the various breeds, but that there is a wide difference between the grades of product. Professor Toole has suggested the following as standard rations for market hogs:

RATIONS FOR MARKET HOGS.

WEANLING PIGS UP TO 75 LBS.

- No. 1. Equal parts of finely ground oats and wheat middlings
 $2\frac{1}{2}$ lbs. of skim milk or butter-milk to 1 lb. meal.
 If skim milk not available, 8 to 10 per cent. tankage.
 (About 1 lb. tankage to 9 or 10 lbs. meal.)

GROWING PIGS, 100-150 LBS.

- No. 1. Barley and oats (ground) equal parts.
 Skim milk, $2\frac{1}{2}$ lbs., or 1 lb meal; or
 Tankage, 8 per cent.

WEANLING PIGS UP TO 75 LBS.

- No. 2 3 parts finely ground and sifted oats.
 1 part low grade flour
 Skim milk or tankage as in No. 1.

GROWING PIGS, 100-150 LBS.

- No. 2 3 parts ground oats.
 2 parts ground corn.
 Skim milk or tankage as in No. 1

GROWING PIGS, 75-100 LBS.

- No. 1 2 parts finely ground oats.
 1 part ground barley.
 1 part wheat middlings.
 $2\frac{1}{2}$ lbs. skim milk to 1 lb. meal.
 If skim milk not available, 8 per cent. tankage

FINISHING PIGS, 150-200 LBS.

- No 1 1 part ground oats.
 2 parts ground barley.
 Skim milk, 2 lbs. or 1 lb. meal;
 or tankage, 8 per cent.

GROWING PIGS, 75-100 LBS

- No 2 2 parts finely ground oats
 1 part ground barley.
 1 part low grade flour.
 Skim milk or tankage as in No. 1

FINISHING PIGS, 150-210 LBS

- No 2 2 parts ground oats.
 3 parts ground corn.
 Skim milk or tankage as in No. 1.

(Note In feeding all market hogs, rather than give actual amounts of feed per 100 pounds live weight, the writer preferred just the amount they clean up well in 15 minutes. Amounts vary with different litters but the 15-minute period is a safe guide.)

FEEDING IN DENMARK.

Pigs fed in the experiment stations in Denmark are weaned at from six to eight weeks of age. The pigs are divided into four groups according to weight.

Class 1 includes pigs up to 40 lbs.; Class 2 includes pigs up to 40 to 60 lbs.; Class 3 includes pigs up to 60 to 120 lbs.; Class 4 includes pigs up to 120 to about 200 lbs., when they are finished. All foods are calculated in "food units," using 1 lb. of grain, such as barley, corn, wheat, etc., as a basis. When roots and other green feeds are used, the food unit is calculated on their dry content. For example, 8 lbs. of mangels, 4 lbs. of boiled potatoes, 5 lbs. of lucerne, or 5 lbs. of sugarbeets equal one food unit. In the case of milk 6 lbs., and of whey 12 lbs., are calculated to have a feeding value of one food unit. In other words, the feeding value of one pound of grain is estimated to have the same feeding value as 6 lbs. of milk, 8 lbs. of mangels, 4 lbs. of boiled potatoes, 5 lbs. sugarbeets, or 5 lbs. of green lucerne or green vetches.

The diet is varied according to the class of pigs fed. In class 1, the ration consists of 30 per cent. milk and 70 per cent. grain, calculated in food units. In other words, the mixture fed consists of 180 parts by weight of milk, to 70 parts by weight of meal.

In food units class 2 gets 25 per cent. milk, 70 per cent grain, and 5 per cent. roots or green fodder. The mixture fed at this stage consists, therefore, of 150 parts by weight of milk, 70 parts by weight of grain, and 40 parts by weight of mangels. If lucerne or vetches are used instead of roots, this part of the mixture would be 25 parts by weight of the mixture, and corresponding weights in the case of sugarbeets, boiled potatoes, etc. Class 3 gets 15 per cent. milk, 75 per cent. grain and 10 per cent. roots, or green fodder. This ration consists of a mixture of 90 parts by weight of milk, 75 parts by weight of grain, and 80 parts by weight of mangels, etc. In class 4, each pig gets three-quarters of one food unit, or $4\frac{1}{2}$ lbs., of milk; one-quarter of one food unit, or 2 lbs. of roots, if mangels, or $1\frac{1}{2}$ lbs. of sugarbeets or lucerne, and the remainder in the form of grain. The food is given in the form of a slop, rather thin, while the pigs are young, and thicker as they grow older. Foods are prepared one day ahead. Mr. Spencer speaks of visiting one station where the grain mixtures, in July, consisted of about equal parts of barley, corn, oats and shorts. The feeding was done three times daily, and only sufficient fed to have the troughs cleaned up when the meal was over. Young pigs up to 60 lbs. of weight get charcoal, and at times, a little cod liver oil.

While it cannot be affirmed that the Danish farmers follow exactly the scientific methods applied at the feeding stations, yet at the farms visited it was learned, by discussing the question with individual producers, that definite plans of feeding were systematically followed. Naturally, there are variations from farm to farm, but on the whole the feeding process has been systematised and standardised. This is due not only to advice given by experts, who secured their data from the breeding and feeding stations, but also to the system of tillage followed in the country, which has already been described.

UNIFORM PRODUCTION OF HOGS.

The importance of uniform production has already received consideration, and the remarkable extent to which uniformity of production is practised in Denmark. One of the chief causes of fluctuation in hog values in Canada is due to excessive marketings at various seasons of the year. Mr. A. A. MacMillan, Chief of the Sheep and Swine Division, Dominion Livestock Branch, has discussed the importance of this problem from the standpoint both of production and market price. He draws attention to the fact that the production of spring and fall litters only has become almost a settled policy with many farmers, resulting in excessive spring and fall marketings. In Western Canada, many farmers raise only spring litters. Mr. MacMillan advances the opinion that this is due to the newness of the country, cold winter weather, and lack of suitable buildings for winter feeding. With this opinion one cannot entirely be in agreement,

especially where settlement has been made for a considerable period. A fair and reasonable return to the producer will quickly overcome the handicap, to the extent to which it exists, of harsh winter weather, while profits will also soon provide suitable buildings. In fact, entirely too much has been made of the disabilities resulting from the hard Western winter. General agreement, however, will be held with his contention that the increased holding of dairy herds, making available adequate skim milk supplies, should make it possible to rear two profitable litters a year. Well constructed straw huts, which are cheap and within the reach of every grain farmer, can easily be built. These straw huts provide a warm, dry shelter, which permits of winter feeding of early litters, with little additional cost over summer production. In Eastern Canada, the low prices that have usually followed heavy seasonal deliveries, have induced farmers to breed sows to produce litters other than during the spring and fall months. This will have a tendency, through distributing supplies over the year, to prevent market gluts. If producers, as in Denmark, can regulate production to meet effective demand, it is reasonable to believe that a higher average price will be secured than is now possible by making deliveries at a time when the heaviest run takes place to the market.

CHAPTER XIV.

SOME ASPECTS OF MARKETING.

THE SASKATCHEWAN LIVESTOCK POOL.

The Saskatchewan Livestock Co-operative Marketing Association, Limited, is a non-profit, non-capital association. It was organised under *The Co-operative Marketing Associations Act*, 1926, of the Province of Saskatchewan. Local associations form the foundation of the organisation. These locals perform certain administrative duties, and also are the basic unit for electing the personnel of the central organisation. The locals are important also from the point of view of assembling, shipping, and integrating the marketing of livestock. It is possible, of course, to form locals only in the farming districts. In ranching areas, where individuals can make ear-lot shipments other methods will be applied. Locals, if possible, should include shipping points which will ultimately ship one hundred cars of livestock in the year. It is proposed to give consideration to places where members can ship conveniently at two points on two lines of railway. Where shipping is done in this way, it is expected that the two points will be included in the same local.

There is a direct agreement between the livestock producer and the association. This contract covers a period of seven years, but the agreement may be terminated at the end of the third year, or in any year thereafter, upon giving the proper notice. Producers must agree to deliver all their sale stock to the association, with the exception of registered stock for breeding purposes; dairy cattle for dairy purposes; livestock required for food for the producer's own family; livestock which may form part of a sale of farm stock and equipment; livestock sold to the local butcher for local consumption and such other stock as the producer may have the written consent of the association to dispose of in any other manner.

The association agrees to market the livestock delivered to it to the best possible advantage of all concerned. Deductions to cover the cost of handling the stock, the *pro rata* share of the overhead and operating expenses of the association shall be made from the gross receipts, and such other sum, not to exceed three-quarters of 1 per cent. of the gross returns to provide a reserve. The agreement became operative when one thousand cars of livestock were signed up under the contract.

The objects of the association are defined as follows: To take and carry on the business of collecting, receiving, handling, feeding, fattening, finishing, slaughtering, storing, transporting, grading, selling, and marketing or otherwise disposing of livestock or any of the byproducts thereof. As observed above, the association is organised without share capital. The membership fee is \$2.00, and the mem-

bership certificate is not transferable. Where a shipping association is already in existence, provision shall be made to receive into the new organisation all members in good standing on such terms as may be deemed just and expedient. These shipping associations shall become locals of the new organisation.

The board of directors shall consist of seven members who shall be elected by delegates; each local shall elect one delegate, except in cases where the membership exceeds two hundred, when two delegates shall be elected. Provision is also made for the election of delegates in districts where there are no locals.

The central marketing agency functions under the direct control of the board of directors. The provisional board of directors were of the opinion that a central marketing agency for Saskatchewan, Alberta and Manitoba should be constituted, to be controlled entirely by the livestock marketing associations of the several provinces, organised and controlled by producers.

In the formation of the association, emphasis was placed upon the idea that co-operative marketing can be made permanent and satisfactorily through the contract, on a commodity basis. Only permanency can make possible an efficient marketing organisation, giving to producers the advantage of collective bargaining at cost. It was because of this conviction, that the livestock producers of Saskatchewan organised themselves on a co-operative basis, according to the contract plan. It was also believed that the contract must be absolutely binding, since it provides for the marketing of surplus stock through the association in the interests of all members. The organisation was designed to remove competition in selling by creating volume to be marketed through a central selling agency. The more obvious advantages were expected to be found in reduced shipping costs by forwarding car-lots, and shipping direct to ultimate markets. A central agency would be in a position to distribute livestock to markets in accordance with effective demand, thus preventing glutting, at certain points. An important feature of the work of the association was expected to be the making of provision to meet an emergency caused by a feed shortage, which in the past has resulted in the dumping of livestock at a sacrifice. By using the combined power of the organisation, a shortage of feed in local districts might be overcome, and livestock held for finishing under favourable conditions. A double gain would accrue here: first, finished cattle would bring better returns to the individual producer; and, second, market prices could be held to higher levels by holding off the market such "distressed" supplies. Western producers have felt keenly the importance of overcoming this handicap, and great interest has been shown in the measures that may be designed by the association to overcome it.

Manitoba and Alberta also have livestock pools under the title of The Manitoba Co-operative Livestock Producers, Limited, and The Alberta Co-operative Livestock Producers, Limited. These two organisations, along with the Saskatchewan association, have formed an inter-

provincial organisation known as the Canadian Livestock Co-operators. The board of directors consists of six members, two representing each province. The objects of the central organisation are:

1. To secure accurate marketing information and to make it available for use at the stockyards of the several provinces;
2. To harmonise the work of the respective provincial associations in connection with organisation and marketing methods. Further, the central body will act as a committee of appeal in all interprovincial matters;
3. To investigate and facilitate the development of interprovincial and export trade; and
4. To deal with all matters of legislation and trade practices, affecting livestock marketing and production.

In the case of members of the association who do not belong to any local, there has not been sufficient time as yet to decide definitely how such members shall participate in the election of delegates. The association, however, hopes to organise the sheep ranchers and have them form an organisation of their own, thus grouping them together for the purpose of electing a delegate. The same action will probably be taken in regard to ranchers, who are producing cattle exclusively, and who are making direct shipments at the present time. They have particular problems of their own, and by grouping them together they will be in a position to express their ideas on organisation and marketing.

With respect to the central selling agency, emphasis should be given to the fact that it is a purely voluntary institution. Alberta's market appears to be becoming more a Western market and to that extent its representatives may feel that they require a certain freedom of action. The three Western provinces, Alberta, Saskatchewan and Manitoba, at the present time are operating a central selling agency at Winnipeg, under a provincial charter, but ultimately, no doubt, they will apply for a Dominion charter. As soon as other provinces are organised on the co-operative basis they will be invited to join the central organisation. At the time of writing this report, it is anticipated that Ontario will organise along the lines obtaining in Saskatchewan, and it will then be possible to make direct shipments from the West to Toronto. In the meantime, efforts are being made to place the work of the association in Saskatchewan on a solid foundation.

DIRECT MARKETING OF MEAT PRODUCTS.

In the attempt to secure for the producer a larger part of consumer price, the farmers of Denmark have organised production on a co-operative basis, and have followed it up to some extent by selling co-operatively not only at wholesale, but also at retail, in Great Britain. As has been already mentioned, English farmers have attempted to carry into practice the same plan of directing the product from the farm to the final consumer, even entering the field of retail distribution.

Similar experiments have been carried on in Canada, but under the control of private capitalistic enterprises. In discussing the problem with British experts, the general opinion seemed to be that farmers could make best progress by confining their activities to improved production of breed and type, and to combined control of selling their supplies to the associated manufacturers. The phase of secondary distribution is sufficiently important to warrant a brief examination of the methods generally followed in Canada and the United States.

The problem is doubly important in view of the serious agricultural situation with which Western farmers were confronted in the post-war period, when the prices of their product were relatively lower than the prices of manufactured goods, both for field use and domestic consumption. Economic pressure on the farm population was even more serious in the United States. Depressed food prices appeared, on the surface at least, to be a good thing for city consumers, nevertheless it meant a real hardship for the farm population. The farmers of the Western provinces have made, during these hard years, remarkable progress in organising distribution of their products, whereby they have secured enlarged control of their own industry. Whether they should enter the field of secondary distribution—the wholesale and retail trades—is a matter that requires the most careful examination. It ought not to be forgotten that Danish farmers are within striking distance of a consuming population of 1,000,000, while British farmers are close to great cities, and are able more closely to control wholesale and retail distribution. The further question arises, as to whether farmers in the prairie provinces should not concentrate first on perfecting a marketing programme up to the point of disposing of their products, to the best advantage, to the organised trade, before attempting to enter into the technical field of secondary distribution. It should be added that Danish and British farmers make retail distribution merely a "byproduct" of the much bigger and more important question of finding a method of controlling the disposal of farm products to the best advantage.

On the whole, it is the opinion of those who have made a thorough study of direct marketing in Canada and the United States, that absolutely direct marketing from farmer to consumer is out of the question for the bulk of farm products. Many farmers who have studied the problem have reached the same conclusion. For example, in that interesting experiment of "pooling" milk supplies in the Saskatoon territory, the majority of the farmers have been of the opinion that the milk supply should be concentrated and kept under control up to the point of dealing with the organised distributors, but that the highly technical and difficult question of retail distribution should be left with the trade, at least until the producers shall have worked out a secondary organisation that could be depended upon to achieve equal results. Where farm products have to be marketed hundreds of miles from the point of origin, middlemen, as a rule, are called in to perform the necessary service. In Canada the meat packer has been such a middleman, and has developed the marketing of meat products on a comprehensive scale. Hitherto, at least, the functions which the

packer performs have been indispensable in the work of getting meats from the farm to the consumer, indispensable, because the consumer must be furnished with animal products of the right kind and quality. The animals are collected from thousands of farms and assembled at the markets where packing plants are located. They are there converted into meat, and the byproducts saved and utilised for different purposes. The meat is prepared, under a highly technical process, for consumption; much of it is cured and smoked. It must be refrigerated; it must be transported hundreds of miles in refrigerator cars. At distributing points, there must be refrigerator houses ready to receive it, and then it must be sold and delivered by retail dealers. In the early days, before the development of the packing trade as it is organised today, many of these functions were performed by separate middlemen. Brokers and jobbers played an important part in the distribution of the meat. Today, the packers perform these functions from dressing of the meats to their delivery into the hands of retailers. This process has been carried farther in the United States than in Canada. For example, one of the large Chicago packers owns and operates thirty packing plants, prepares the meat, ships it in its own refrigerator cars, and maintains over four hundred branch distributing houses throughout the country, which sell direct to retailers. This company also has more than five hundred "car routes" over which direct refrigerator car shipments are made to retailers, in more than 7,000 of the smaller cities and towns. Salesmen, both at the branch houses and in the "car route" territories, take care of retail requirements.

This form of direct marketing is possible, of course, only because it is done on a very large scale. There is keen competition throughout the entire packing industry and the packers work on exceedingly small margins as far as returns from meat products alone are concerned. Therefore, they are under pressure to adopt every possible economy that can be discovered. Undoubtedly, their direct selling methods have resulted in eliminating unnecessary handling of meats, and have greatly reduced costs of distribution. British packers, who operate in the Argentine and control the product from the time it is bought from the farmer until it reaches the British consumer, have worked out an even more comprehensive plan of secondary distribution. In the United States, however, where the population is much greater than in Great Britain, the packers have perfected a direct, nation-wide marketing system, which performs indispensable functions with the fewest possible wastes and the least possible expense. It is well known that the average profit from these operations amounts to only a fraction of a cent per pound of the product handled. The turnover is so enormous that the packers have been able to secure large returns. It is worth bearing in mind, however, that profits as well as expenses per pound of meat depend in large measure upon the volume handled. Other things being equal, the highly organised packing plant with its trade connections will always have the advantage in production costs over the small producer.

Conditions of production and distribution must vary from product to product. In various cost studies made in the United States, it has

been shown that farmers get from 35 per cent. to 50 per cent. of the retail price of their commodities. It is significant that packers themselves state that in the case of farm products handled by them, the farmer gets on the average about 60 per cent. of the retail price. It is claimed that for many of these products, the cost of marketing is greater than the cost of raising the products on the farm. An extreme example would be California cantaloupes, where the farmer gets less than 20 per cent. of the New York City retail price. The cost of raising cantaloupes in the Imperial Valley is very small compared with the cost of placing this product into the hands of the consumer three thousand miles away. These secondary costs include crating and hauling to a local shipping point; carriage by refrigerator car for twelve days across the Continent; and, finally, along with other costs, marketing the product through the jobber, the distributor, and the retail store. In the retail store, which is also expensive to operate, some of the cantaloupes spoil. It is well to bear such facts in mind when discussing the proportion received by the farmer from the consumer's dollar. It may be added that for California oranges the grower gets only approximately 41 per cent. of the retail price; and it is calculated that frequently the farmer gets only one-third of the retail price for potatoes, while Western apple growers get from 20 to 25 per cent. of the price consumers pay for boxed apples. Some of these costs of distribution are necessary, but it should be possible to eliminate many others that reduce prices to producers while increasing those paid by consumers. Mr. Stuart Chase, the American economist, has recently made a penetrating study of these and similar problems, in which he shows how heavy is the burden of distributive business carried by primary producers and consumers.

Packers, however, state that an examination of actual figures will show that, in the case of beef, the farmer receives for his live animal around 90 per cent. of the wholesale price, and from 65 to 70 per cent. of the final retail price of beef. In comparing the farm price of meat with the retail price, however, it is necessary to take into account the fact that the animal consists of two parts, namely, beef and byproducts. It is calculated that for the beef content of his steer the farmer gets about 58 per cent. of the final retail price of beef. In a study of this problem appearing in the 1925 Year Book of the United States Department of Agriculture, under the title, "What the Farmer Gets," these and similar facts are brought forward. One of the large Chicago packers, using the Department of Agriculture's figures in computing retail expenses and profits, and its own beef results in determining packer expenses and profits, presents the following data on the per cent. of the retail price that is reflected back to the primary producer:

Consumer pays for beef	100 %
Retail expense and profit	22 %
Packer expense and profit	15.5%
Transportation and marketing expense (live animal—beef content).	4.7%
Farmer receives for beef content of animal	57.8%
Farmer receives for byproduct content of animal	12.9%
Farmer receives for beef and byproducts	70.7%

Spectacular figures have been presented showing the gap, for example, between a ten-cent steer and a sixty-cent porterhouse steak. These figures, however, ignore the fact that a small percentage of the dressed weight consists of such cuts, and that the cheaper cuts may bring the average price down to a relatively low figure. It is contended that if all kinds of livestock are taken together, and that if proper allowance is made for byproducts, it may be concluded that the farmer gets for the meat in his animals from 55 to 60 per cent. of the price finally paid for meats by the consumer. Packers contend that there is no conflict between these percentages and statements frequently made to the effect that they pay from 80 to 85 per cent. of the price they receive, for all meats and byproducts. In the case of beef, for example, the unmanufactured byproducts obtained from the steer are worth about one-sixth as much as the beef. The 55 to 60 per cent. refers to the meat only, and is based on final retail meat prices. The 80 to 85 per cent. apply to both meat and byproducts, and is based upon the wholesale price received by packers from retailers, and not on the retail price, which, of course, is considerably higher.

In the Report of Committee No. 4, page 64, National Distribution Conference held in the United States during 1925, a special study was made of the costs of operation of packers' branch houses, which represent the wholesale end of the packing business. This conference studied the costs of distribution in seventeen wholesale trades, and of the seventeen trades investigated, the cost of packer branch house operation was the lowest. It should be borne in mind that American as well as Canadian packers handle other farm products, including butter, eggs, cheese, poultry, etc. The branch houses and refrigerator car routes were established primarily to handle meats, but it was a relatively simple matter to add butter, eggs and other commodities, since these could be stored in the same coolers, hauled in the same refrigerator cars, marketed by the same salesmen, delivered in the same trucks, and sold to the same retailers. By dealing in these farm products, the volume of business was increased, resulting in reduced marketing costs not only for these products but on meats as well. It is calculated that livestock, dairy, and poultry products yield about one-half of the total farm income of the United States; therefore, it is evident that the marketing of these products is a question of basic importance for the farmers of that country. It should be added, that the big packers by no means control either processing or marketing of animals and their products in the Republic. At the same time, packers are able to cut down marketing costs on important food products because of the direct marketing plan they have evolved, which embraces a large volume of business, rapid turnover, and efficient management.

Western farmers are intensely interested in the problems that arise in connection with the direct marketing of their products. Beyond doubt, producers should loyally and uniformly support their own marketing organisations, for each basic product. As already mentioned, however, there is room for a wide difference of opinion as to how far farmers should carry this process. If they enter the field of manufacturing, as has been done in Denmark, manifestly they must control

not only the supply, but furnish that supply in volume. In the field of secondary distribution, that is, in the wholesale trade, direct marketing without the use of jobbers is impossible unless there is a very large volume of business, or unless the producers own and operate their own retail stores—and even there volume is of basic importance. The packers have achieved success in measurable degree because volume has permitted the holding of expenses at each branch house to a minimum. Emphasis should be placed upon the fact, again, that wholesale and retail marketing are merely byproducts of the Danish comprehensive programme of co-operation, including co-operative processing.

THE HOG AND BACON TRADE.

Recent trends in the Canadian hog and bacon trade have already been examined, but additional data may be presented at this point. On the whole, Western farmers have done well in the swine industry during the period under review, and it has proved profitable during the same period for Canadian farmers in general. During the year 1926, the output of hogs sold at stockyards and packing plants under federal grading, amounted to 2,754,505 head, as compared with 2,883,418 head in 1925, a year which produced a heavy volume for market. While supplies were smaller in volume than in 1925, there was a higher average price per hundred. The higher estimated value per head was approximately \$1.75 over the preceding year. In view of the fact that in 1925 the value of hogs at stockyards was about \$7.00 per head higher than in 1924, the 1926 price movement was all the more satisfactory. The ratio as between feed costs and hog values was such as to return a good profit on grains marketed as pork.

The Dominion Department of Agriculture, through the Livestock Branch, has made a careful analysis of conditions in the swine industry during the past year. From the figures presented by the department, it is found that the number of select hogs graded out was 431,362 head, as compared with 438,224 in 1925. As is pointed out, the percentage of selects shows higher in 1926, being 15.66 as against 15.20 in 1925. This, of course, was on a somewhat smaller total supply than for the previous year. The percentages were 14.52 in 1924 and 11.97 in 1923. There was also a slight increase in the percentage of thick smooths, fifty per cent. decrease in shop hogs, and a fair increase in lights and feeders, the latter being due to a strong demand prevailing throughout the year for that class of stock.

The market throughout the greater part of the year favoured the producer and would have returned a good profit on an even greater volume, commitments during the greater part of the year being inadequate to meet the demand. It was during 1926 that packers found it difficult to supply the domestic demand, and provide a full movement of bacon to the British market. The real causes, however, for the situation in Great Britain have already been explained. During 1926, Canadian supplies in the English market were at times negligible in proportion to supplies received from other countries. During 1926,

also, a favourable outlet for Canada's live hogs was secured in the United States. This outlet became of greater importance as prices continued to decline in the British market, and, in fact, was the main factor in stabilising prices in the Dominion. Strong competition from Denmark, Holland and other countries made it increasingly difficult for Canadian packers to trade in volume with Great Britain. The Canadian packing trade often paid prices for their supplies which were out of line with the British market and which, as already noted, resulted in disastrous losses to the industry.

While no great improvement took place in 1926 in the volume of select hogs, nevertheless reports from the stockyards and packing plants went to prove that progress was being made with respect to type and finish in the supplies handled. This was particularly true of supplies received on the Western markets, thick smooth hogs showing the results of improved breeding. The Dominion Livestock Branch regarded this as furnishing fair evidence that the farmers of the West were, in a very practical way, appreciating the necessity of shaping their hog type and finish to meet the requirements of the market.

One of the outstanding features of the 1926 trade was the good demand that existed not only for all grades, but particularly the relatively good prices secured for feeder hogs. The demand for store hogs was very strong throughout the year; and at times in the West, light hogs and feeders earned premiums. At the end of the year a very heavy demand developed for feeding stock, while there was little indication of unwise selling of breeding stock. The table following shows the number of select and thick smooth hogs marketed during 1926 as compared with 1925:

TABLE SHOWING NUMBER OF SELECT AND THICK SMOOTH HOGS MARKETED DURING 1926 AS COMPARED WITH 1925.

	Selects		Percentages		Thick smooths		Percentages	
	1926	1925	1926	1925	1926	1925	1926	1925
Alberta	31,493	20,208	5.55	3.53	413,240	406,002	72.79	70.85
Saskatchewan	6,199	5,524	4.95	5.04	89,256	64,759	68.71	59.02
Manitoba	33,988	26,891	8.15	5.52	242,747	268,884	58.26	55.23
Ontario	319,470	335,015	24.91	24.80	773,217	824,338	60.28	61.02
Quebec	40,232	50,586	11.91	13.94	206,795	194,567	57.08	53.60
Total	431,363	438,224	.....	.....	1,723,255	1,758,530	.....	.....

As stated above, the market movement during 1926 showed a strong upward trend, good returns being secured by producers in relationship to the costs of feeds.

Values reached their high point in June, when the range of all markets showed an average price of from \$15.40 to \$16.72 on select bacon, as compared with an average price range of \$14.51 to \$15.34 in August, 1925, the high month for that period. It is interesting to notice that the extreme price range on selects was from a low of \$10.17 at Winnipeg to a high of \$17.46 at Toronto. The weighted average price of select hogs at Toronto was \$17.70, as compared with \$14.12 in 1925; at Montreal \$13.81, as compared with \$13.46; at Winnipeg \$13.23, as compared with \$12.55; Calgary \$13.86, as compared with \$12.70; while Edmonton, Moose Jaw and Prince Albert indicated similar advancements.

Canada sold Great Britain 90,843,600 lbs. of bacon in 1926, as compared with 130,503,700 lbs. in 1925. This represented the smallest volume marketed in Great Britain at any time during the past five years; and not only was volume affected, but trade values as well. The movement of pork to the British market also showed a reduction, the total being 6,536,300 lbs., as compared with 7,909,600 in 1925, although pork prices brought slightly better returns. The Dominion sold to the United States 1,596,800 lbs. of bacon, as against 1,277,600 lbs. in 1925, and 8,233,700 lbs. of pork, as compared with 7,014,300 lbs. of pork in 1925. The total cash value of bacon exports to all countries was approximately \$23,000,000.00, as compared with \$29,000,000.00 in 1925, while pork exports amounted to \$3,651,549.00, as compared with \$3,139,120.00 in 1925. The following table, prepared by the Dominion Livestock Branch, gives the general trend of Canadian baled bacon on the British market for the years 1922-1926:

MONTHLY AVERAGE PRICE OF CANADIAN BALED BACON ON THE
BRITISH MARKET, 1922-26.
(Per long hundredweight.)

Month	1926		1925		1924		1923		1922	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	115		107		89		103		112	10
February	113	6	104	6	86		95		123	10
March	115		110		86		95		116	6
April	120	6	112	6	86		112		115	
May	126		113	6	88		115		130	
June	116	6	119		95		94	6	135	
July	116		114		97		97		135	
August	118		129	6	109	6	116	6	135	
September	107		134		108	6	118		135	
October	100	.	125	6	111	6	95		121	
November	99		119		110	6	97		120	
December	93		132		104		87		132	3

Both Prince Albert and Moose Jaw reported improvements in the percentage of hogs grading selects, this being due in part to the fact that feed was plentiful, which reduced the number of light and underfinished hogs marketed. At Moose Jaw hogs showed an increase of 3,800 head as compared with 1925 offerings. Demand was exceptionally good throughout the year, and ruling prices during the first ten months were on a par with Winnipeg. Receipts for the year were fairly evenly distributed; nevertheless, there was still room for improvement in that particular. The first six months showed 10,000 head below 1925, but the last six months more than made up the difference. All hogs were sold on grade, with thick smooths serving as the basis. Practically all quotations were on a fed and watered basis. The Moose Jaw market reported that prices during the year were very satisfactory and encouraging for the producers. Thick smooths opened the first week of the year at \$11.65 to \$12.25, and at no time during the first seven months was the price below that mark. The peak of the year was reached late in June and early in July, when thick smooths made \$15.00. The two heaviest monthly runs were for April and December. Shop hogs and feeders usually sold on a par with thick smooths. Feeder hogs were plentiful during the early autumn run, yet feeders of good quality were seldom penalised more than a 25-cent to a 50-cent cut.

The following tables give the figures on the hog marketings, 1922-1926, and the grading of hogs at stockyards for the same periods:

STATISTICAL SUMMARY OF HOG AND BACON TRADE.
Comparative Hog Marketings, 1922-26.

	Sold on stockyards					Received on through billing				
	1926	1925	1924	1923	1922	1926	1925	1924	1923	1922
Toronto	312,100	383,202	465,975	377,043	318,614	23,080	26,253	20,986	36,579	23,079
Montreal (W)	151,847	145,567	133,835	144,210	106,341	14,701	7,238	3,518	2,539	4,620
Montreal (E)	34,502	56,127	63,888	57,941	58,450	1,851	7,316	6,137	554	346
Winnipeg	348,809	414,316	372,053	243,792	176,777	42,174	72,249	67,897	49,678	43,389
Calgary	95,939	129,550	119,687	88,658	82,583	17,224	20,711	14,226	12,939	5,841
Edmonton	121,769	83,483	74,855	73,501	71,047	734	865	2,437	951	1,083
Prince Albert	11,535	15,748	20,807	12,794	7,562	177	163	420	44	53
Moose Jaw	62,032	56,161	60,462	33,717	14,399	16,829	22,638	28,885	24,672	18,600
Total	1,138,533	1,286,154	1,311,363	1,031,656	835,773	116,770	157,533	144,306	127,956	97,011

GRADING AND PERCENTAGES OF TOTAL HOGS SOLD AT STOCKYARDS, 1922-1926.

Grading	No. sold					Percentage of total				
	1926	1925	1924	1923	1922	1926	1925	1924	1923	1922
Select Bacon	144,509	164,581	170,628	152,856	644,446	12.70	12.80	13.02	14.89	83.96
Thick Smooth	660,335	729,849	721,573	565,267	58,00	56.75	55.02	55.06	55.06	.....
Heavies	53,635	44,529	58,756	66,243	32,206	4.71	3.46	4.48	6.45	4.20
Extra Heavies	13,816	9,738	11,406	9,810	.....	1.21	.76	.87	.96	.....
Shop Hogs	94,650	229,455	229,576	138,052	64,369	8.32	17.84	17.52	13.45	8.93
Light and Feeders	100,545	52,568	56,165	56,202	.....	8.83	4.09	4.28	5.47	.....
Roughs	2,567	1,822	1,835	2,165	.....	.23	.14	.14	.21	.....
Sows, No. 1	26,450	25,515	31,385	16,355	24,755	2.32	1.98	2.39	1.59	3.22
Sows, No. 2	27,311	25,447	28,142	17,955	.....	2.39	1.98	2.14	1.75	.....
Stags	2,640	2,650	1,896	1,785	1,831	.23	.29	.14	.17	.23
Ungraded	12,075	.....	.....	.....	.....	1.06	.....	.....	.....	.....
Total	1,138,533	1,286,154	1,311,362	1,026,690	767,607	100.	100.	100.	100.	100.

NOTE—East End Yards (Montreal) not included in these totals previous to 1922.

CO-OPERATIVE PACKING PLANTS.

Experience in the co-operative packing industry on this Continent has not been a happy one, due chiefly to the application of unsound financial policies. In a study made by the United States Department of Agriculture (Report No. 113), data are presented indicating the practices of such organisations. Following upon the widely demonstrated practicability of co-operation as a means of marketing grain, dairy, fruit products, etc., a movement was launched in the United States to undertake similar enterprises in the field of slaughtering and distributing of meats, more particularly of hog products. An examination of the packing industry, whether in Denmark, Canada or the United States, forces recognition of the fact that packing is a complex and specialised industry, requiring a fairly large capital to provide proper plants, and also to finance stock in storage. It goes without saying that highly trained management is vital for success; and success has been achieved in Denmark along co-operative packing lines, while on the other hand the movement has failed in the United States. It should be added, that failure in the United States has accrued chiefly because co-operative ideas and practices have not been firmly applied.

The application of co-operative methods to the packing business was first attempted at La Crosse, Wisconsin. At that centre an association known as the Farmers' Co-operative Packing Company was organised in June, 1914, under the co-operative laws of Wisconsin. The proposal immediately became popular with farmers and resulted in the launching of other companies, capitalised at \$100,000.00 to \$1,000,000.00 each, in at least sixteen other communities and six states. Including the one at La Crosse, this represented a total capitalisation of \$4,500,000.00, but a number of these projects were abandoned. The company at Wausau, Wisconsin, began operations in January, 1916. By that time organisation had been completed and building operations begun at two other plants, and further companies were in process of organisation. It should be added that the laws of Wisconsin relating to co-operative associations and to unjust discrimination in prices are considered especially favourable for co-operative meat packing enterprises. This is made clear by the fact that Wisconsin was selected as being the most desirable field to launch these organisations.

Although organised as farmers' co-operative packing companies, with capital stock owned largely by farmers, practically none of these companies were originated by the farmers themselves. Moreover, they were promoted chiefly by persons from outside the communities concerned. This explains in part the high costs of promotion, ranging from 15 to 25 per cent. of the capital stock: that is, in the case of a company capitalised at \$500,000.00, from \$75,000.00 to \$125,000.00 was expended for the sale of stock alone. It is interesting and significant that in the case of a non-co-operative local packing company, capitalised at \$300,000.00, promotional costs were only \$400.00, or a little more than one-tenth of 1 per cent. of the capital.

In the case of one of the co-operative companies, the amount received from the sale of stock and the premiums was reported to be

\$266,515.00. The stock was owned by approximately 2,100 individuals, most of whom were farmers residing within a radius of 100 miles of the plant. The cost of organising this company was \$37,814.53, and the total cost of plant and equipment, including additions and improvements, was \$134,228.56, which left \$94,471.91 with which to operate the plant and conduct the business of the company. In the following year this amount was reduced to \$83,732.87 by additional improvements. The losses incurred by the company during the first 18 months of operation reduced the operating capital to a little more than \$12,000.00. This company was handicapped from the beginning and cannot be considered as a fair example of what may be accomplished by co-operative plants organised and operated under more favourable conditions. On the other hand, farmers, by studying the experience of such concerns, will be able to avoid making similar disastrous mistakes.

The business of co-operative packing companies, with respect to furnishing necessary capital for plant and equipment, and for operating expenses, and to take care of the marketing of finished products, cannot be very unlike that of non-co-operative companies operating under similar conditions. Authorities on co-operative organisation agree that the more simple the processes involved, the more certain is the success of co-operative concerns. Considering the complexity of a large scale packing business, it would seem that, if co-operative plants similar to those in Denmark are to be launched, the smaller type of enterprise would probably afford greater opportunities for success. By limiting the business to local trade at the start, and gradually expanding the enterprise, there would be greater probability of ultimate success. It should be added that the types of co-operative organisations referred to above, no matter what their apparent form may be, are not truly co-operative enterprises, assuredly not in the Danish sense. Promotional expenses, stock jobbing and high finance have no part in a packing plant formed on the Danish model.

MANUFACTURING AND DISTRIBUTING PROBLEMS.

Manufacturing problems present questions of great difficulty in the packing industry, especially when producing for the export market. If packing is confined chiefly, as in Denmark, to the production of pork products, somewhat different problems arise than in the production and marketing of beef. On the Continent beef is sold principally in the form of fresh meat. In the case of pork, however, less than one-third of the weight of the dressed hog ordinarily is marketed in the form of fresh meat; the other two-thirds usually are cured with salt or pickle and then smoked. It should be observed that some pork cuts may be marketed in more than one form. For example, hams may be sold fresh, pickled, smoked, or cooked; spare-ribs may be sold fresh or cured. The form in which they are sold depends chiefly upon the most profitable, effective demand at the time that the hog is processed. All manufacturing, of course, is done with the object of making commodities which will satisfy the consumer. There are considerable differences in this respect that must be taken into account in studying

the British market, and demand in Canada and the United States. The problems arising thereunder have been carefully analysed in a preceding section.

It is important to observe that the identity of the live hog is completely lost in the manufacturing process. Different assortments of cuts and products, each of which furnishes a separate article of commerce, have their own peculiar demand, follow their own course in the channels of trade and sell at a price determined by consumer demand for those particular products. It should be observed that the prices at which such products are sold may have little relation to the price of live hogs. This fact proved disastrous to Canadian packers who were placing bacon on the British market under falling prices at a time when live hogs stood well above the level of pork products. Under co-operative production, as in Denmark, the farmers must assume such losses, as prices of live hogs are not only related weekly, and even daily, to prices of hog products in England, but the ultimate settlement depends upon the prices at which manufactured products are disposed of in the English market. It should be added, however, that although the losses must be borne by Danish producers, exceptional profits also are reflected in the ultimate settlement price.

Approximately 76 per cent. of the hog emerges from the manufacturing process in the form of edible materials, nearly 4 per cent. in the form of inedible byproducts, while a little over 20 per cent. disappears in evaporation and other shrinkage. This represents sheer loss in weight that is not recoverable in any form. Of course, the proportions of the various cuts and products will vary with the physical characteristics of the hog and the demands of the trade. The following figures are presented by Swift & Company as being fairly representative of the hogs slaughtered by them:

PORK PRODUCTS FROM A 250 POUND HOG.

Finished Weights.

	%	pounds
Hams, smoked	13.00	32.50
Bellies or Bacon	11.75	29.37
Loins, Fresh	9.50	23.75
Fat Backs, Salted	9.50	23.75
(1) Lard, Rendered	9.00	22.50
Picnics, Smoked Shoulders	5.00	12.50
Boston Butts, Fresh	4.25	10.63
Clear Plates, Salted	2.75	6.87
Lean Trimmings, Sausage	2.25	5.63
Jowl Butts, Salted	2.25	5.62
Spare-ribs, Fresh	1.25	3.13
(2) Miscellaneous Edible Items	3.00	7.50
Yield	<hr/> 73.50	<hr/> 183.75
(3) Edible Byproducts	2.25	5.62
(4) Non-Edible Byproducts	3.75	9.38
Shrinkage	20.50	51.25
Total Live Weight	<hr/> 100% .	<hr/> 250 lbs.

- (1) At times some of the fat cuts are converted into lard; this results in an increase in the proportion of lard produced to about 15 per cent. of the live weight of the hog on the average, and reduces the other cuts.
- (2) Including—Feet, Neck Bones, Tails, Brains, Cheek and Head Meat, Ears, Lips and Snouts.
- (3) Including—Plucks, Gullet Meat, Weasand Meat, Giblet Meat, Tongues, Kidneys, and Stomach Linings.
- (4) Including—Casings, Bungs, Blood, Hair, Grease and Tankage.
Note: Although this method of cutting is typical, proportions vary with changing trade requirements.

Bacons, hams and loins comprise about 35 per cent. of the live weight of the hogs, and cater to a preferred demand on the part of consumers, indicated by the higher prices at which these cuts are sold.

Ordinarily about two-thirds of the dressed weight of the hog is put through a curing process, but fresh pork is sold as promptly as fresh beef. Pork loins are the most valuable and representative fresh cut. During the season of heavy production, part of the pork loins are frozen and held for future consumption, but ordinarily about 95 per cent. of them are sold while fresh, within from three to fourteen days from the time the hogs are dressed. The supply of fresh pork loins is, therefore, directly dependent upon receipts of hogs. If receipts are light the supply of pork loins is also light, because there is practically no storage reserve to draw from, as in the case of lard and hams. High and low receipts of pigs, therefore, are quickly reflected in low and high pork loin prices. Put another way, there is an inverse correlation between receipts of hogs and prices of pork loins. This affords a striking example of the effect of changes in supply on the price of a perishable product. It is apparent that pork loin prices and live hog prices move together in a general way, but there is an absence of the almost perfect correlation that characterises hog receipts and pork loin prices. This result is material and almost inevitable. Pork loins comprise only about 9½ per cent. of the finished weight of the hogs; they are a separate and distinct commodity, the price of which is determined by supply and demand conditions in the pork loin market. It follows that costs of production in relation to hog supplies have little relation to actual market prices at a stated point of time. In the long run, however, costs of production at least must be covered in the selling price, or farmers will be forced out of the industry. Over short periods of time, however, the effective demand for hog products is the governing factor determining live hog prices. Increased supplies lower effective consumer demand, and this fact is reflected in decreased live hog market values.

The price of pork loins is only one factor in the price of hogs, as they are only one of the many products that result from the manufacture of hogs. The value of any one of these products is determined by what it will sell for in the market. The prices of all of them vary frequently, both with respect to each other, and with respect to the price of hogs. The merchandising of cured hams and bacon, of lard, etc., is affected by the fact that these products are held in the packing house for several weeks while in the process of cure, or for other cause. For reasons already given, chiefly because of the length of time involved in

processing and transporting, there may be wide discrepancies between the prices of these products and the prices of raw materials in the form of live hogs. Sufficient has been said to demonstrate that the manufacturing process has an important bearing upon the marketing problem, complicating that problem, and rendering marketing in some respects a highly speculative enterprise.

CHAPTER XV.

PRODUCING FOR THE MARKET.

EFFECT OF PORK EXPORTS ON THE PRODUCTION AND PRICE OF HOGS.

In connection with the above, it may be well at this point again to draw attention to the important economic effects of foreign trade on pig production within Canada and the United States, and the stability of the packing industry. The export trade of the United States consists chiefly of hams, bacon, lard, neutral lards, and canned, fresh and pickled pork. Such exports enable primary producers in the United States to breed and finish a larger number of hogs than otherwise could be done at a profit. Moreover, exports of meats and byproducts help to stabilise prices, not only by taking large supplies of pork products off the domestic market when prices are low, but also by permitting packers to pay higher prices because of profitable sales of byproducts. According to estimates of the United States Department of Agriculture, from 1907 to 1913, inclusive, the Republic produced on the average, 8,847,000,000 lbs. of pork annually. Annual exports of pork products during that same period amounted to 1,073,000,000 lbs. on the average, or about 12.1 per cent. of total production.

From 1914-1921, inclusive, the average annual production was 10,066,000,000 lbs., of which 1,648,000,000 lbs. or 16.4 per cent., was exported. Figuring the average dressed weight of hogs at 160 lbs., this export outlet furnished a market for pork equivalent to the weight of 6,700,000 hogs per year before the war, and about 10,300,000 hogs per year from 1913 to 1921. The average export figures given above for the period from 1914-1921, inclusive, are about equal to the consumption of pork in the States of New York, Pennsylvania and Massachusetts. It is calculated that a 20 per cent. increase in the purchases of pork in the United States would mean an increase in domestic consumption as great as the average volume of export trade to which reference has been made. Experience shows that domestic consumption in the Republic can increase by more than 20 per cent. in a year, under conditions of high prosperity. As has already been made clear, during the past two years, supplies in the United States have been required mainly for domestic consumption. These facts demonstrate that the home market is very much more important to American farmers than the export market. At the same time, since export pork products consist principally of side meats, hams and lard, the foreign market is important in sustaining domestic prices. For example, the United States ordinarily exports about one-third of its production of lard, and if this outlet were reduced materially, far-reaching effects on hog production and hog prices would follow. Exports, however, have not the same weight in determining prices in the United States as they have in Canada. Exports from the United States are now chiefly governed by the level of domestic prices, which in turn are affected by the volume of production. This is not the case, of course, for products such as

lard, in connection with which foreign demand plays an important rôle. In years of heavy production and low prices, the United States has been able to send large supplies to Europe. It would appear that exports, in the case of the United States, serve as a "shock absorber," rather than as a factor in raising prices. Swift & Company have stated that foreign trade "has furnished a welcome price cushion during periods when the hog industry was faced with extremely heavy production, poor domestic demand, or a combination of both."

SCIENCE AND THE PACKING INDUSTRY.

The packing industry has become not only one of the most highly organised, but also one of the most scientifically operated industries of modern times. It has gone through many stages in development, from the rudimentary, local slaughter plant of early times, through intermediate stages, to a degree of development where every possible aid is made of the results of science, both in curing the product and in manufacturing byproducts. In the larger packing establishments chemical laboratories have been established; and scientific plant control, as well as research in manufacturing processes, are among the characteristic features of the industry. The real origins of the packing industry are lost in the remote past, when it was a household undertaking. In modern times the packing industry is characterised both by the use of mechanical processes and the application of chemistry to the curing of the product, as well as to the manufacturing of byproducts. For example, oils and fats may be manufactured into soap, hides into leather, and the tissues of the bone and skin into gelatin or glue. Necessarily, the mechanical aspects of the business were developed first, as has been shown in great detail by Mr. L. D. H. Weld, Mr. Arthur Cushman and other authorities. Almost imperceptibly the small abattoir with its wasteful and insanitary methods has passed away, and the modern plant of high efficiency, with its emphasis upon sanitation, and indefatigable search for commercial economies, took its place. Mechanical refrigeration and the refrigerator car came into use, and the principles of refrigeration were extended to other departments. During all this time attempts were made to utilise all parts of the animal body, and the byproduct industry developed rapidly. It is impossible to overestimate the importance of mechanical refrigeration to the packing industry, and the wide use to which refrigeration has been put. To be sure, refrigeration can be used only within limits, but the perishability of animal products has been so reduced that they can be moved readily from centres of production to centres of consumption. In the old days hogs could be slaughtered, according to the ordinary farm practices, only in the late fall or winter season.

In the process of evolution of the industry, the edible organs of the animal were separated from the offal and sold as food, while the remainder was rendered in tanks for the recovery of lard and tallow. This tankage was pressed and the lard and tallow barreled. Thus there developed around the central packing plants a group of so-called satellite industries, at first separately owned and managed, which made use of the unfinished byproduct of the plants. These secondary

industries took the form of lard refineries, which bought the packing plant product and refined and bleached it for sale on the open market. Other factories purchased neutral lard and oleo oil for the manufacture of oleomargarine. Soap factories took various grades of tallow, while fertiliser plants purchased the pressed tankage and raw or pressed blood, which they dried and manufactured into fertiliser. Glue works manufactured glue from the bones, sinews and other materials. Gradually, however, these secondary industries disappeared, being absorbed by the packing plants, so that in the end the great modern packing plant became a self-contained institution, processing its own raw materials and manufacturing many byproducts. It is important to observe that it was in the byproduct industries that chemists and other scientists were first employed. Today, science in the packing house consists largely of the application of chemistry to industrial processes. As is pointed out by Mr. W. D. Richardson, the raw material upon which science does its work in the packing house industry is the most complicated physico-chemical entity in the world, that is, the animal body. As is stated by this authority, chemistry has not yet been fully applied to the packing industry, and has merely made a beginning, being carried farthest, perhaps, in the preparation of the extract of a ductless gland, adrenalin, or thyroxin. But even in the rendering of fats, the preparation of blood albumen, the manufacture of gelatin, or of pepsin, etc., the modern packing industry must rely upon the research methods and processes of the chemist. It is exceedingly difficult to apply modern science to an old industry which has already formed its traditions, because the inertia of the rule of thumb process must be first overcome. Science is accomplishing much in standardising and perfecting the curing of hams and bacon, in making known the peculiarities of salt, and the effect of salt on the curing process. Thus science is both corrective of bad practice and creative of new methods of utilising the animal and its products. Much research has been undertaken not only into the best methods of curing hams and bacon, in producing sausages, etc., but in analysing the properties of fats and oils, and in conducting research into the making of soap and glycerine, glue and gelatin, fertilisers, animal feeds, etc. It is obvious that there is an immense field for scientific endeavour in the packing industry, in controlling and standardising not only meats, but fertilisers, animal feeds and other byproducts. The scientist seeks to improve old processes and products; to invent new processes and products; but above all to assimilate inventions made by others outside the organisation, and adopt and apply them to the industry. Enough has been said, perhaps, to make it clear that the modern packing plant is not only a complex business unit, but that success depends in large measure upon the application of science, and more particularly chemical science, to the industry. While the small plant may possibly meet with commercial success, it should be evident that the larger organisations have the advantage both from the standpoint of adding to profits by utilising byproducts, and from their ability to carry the cost of laboratory research. In Denmark, the local packing plant has been able to carry on successfully, because research and other costs are provided for through the central organisa-

tion of the industry. This is an important fact to be borne in mind, because the large packing plant of Canada or the United States from the Danish standpoint must be compared with the achievements of Danish industry organised on a national basis.

CHARACTERISTIC FEATURES OF THE PACKING INDUSTRY.

Without going into details, it may be said briefly that with the advance of settlement livestock production and packing have moved westward. At first there was a decided prejudice against Western meats in Eastern markets, but this has been largely overcome. In the United States there were other obstacles in the way of Western livestock development, which came from the railroads and Eastern stock-yard interests, as well as other industries which had developed in connection with the feeding and shipment of Western animals by rail to Eastern markets. In the United States the early opposition of the railroads to the development of the packing industry was so keen that the Chicago packers had to provide their own refrigerator cars, and, indeed, still continue to operate them today. As the packers have developed this part of their business they have built up transportation departments which keep track of the cars, take care of repairs, and give the expert service which refrigerator cars require. The American packers pay the regular freight rates on products shipped, and receive in return a mileage rental from the companies for the use of the cars. Under certain conditions this rental has yielded a profit to the packers and at other times it has resulted in a loss. It may be added that these refrigerator cars and their operation now come under the control of the Interstate Commerce Commission, and mileage rentals are adjusted from time to time in accordance with the cost of maintaining and operating the cars. When these preliminary difficulties had been swept aside, the industry began to grow rapidly. This was due not only to natural factors favourable to the establishment of packing to Chicago and other Western points, but to the unusual ability of men who entered the field--P. D. Armour, G. F. Swift, G. H. Hammond, Nelson Morris and others. Livestock production expanded in the North-west, and West, and the South-west, and other packing centres developed, such as those at St. Paul, Omaha, Sioux City, St. Louis, Kansas City, Denver, Oklahoma City and Fort Worth. It should be borne in mind that packing plants, especially built on a big scale, cannot be distributed in too large numbers throughout the producing areas. The livestock supply would probably fail to keep these plants operating to the maximum, because such supplies in the United States and Canada are still too seasonal. Other difficulties would be found in the furnishing of adequate labour supplies and proper shipping facilities. It seems reasonable to conclude that, taking into account livestock supplies today, the packing plants have been so situated as to strike a balance between producing areas and the consuming sections. A different balance has been struck in Denmark, but in that country the packing plants are given over chiefly to the processing of swine, and the production of raw material has been so organised as to assure the plants steady and uniform supply of pigs.

With the development of the packing industry in the Middle West, and also in Western Canada, important market places have also been developed at the stockyards. The packing plants have obtained their raw material in the past either by sending buyers to the farms and ranches, or by buying at the central stockyard markets, to which the farmers have consigned their stock on commission. It is clear that where supplies are continuous and where they come forward in volume sufficient to meet the requirements of the packing plants, stockyard buying is more satisfactory than sending buyers into the country. Farmers find it a more economical method, and can generally feel safer in selling their animals at the going market price. It is evident that the commission men at the stockyards, together with their organisations and exchanges, have played a very important part in developing markets along efficient and honest lines. Where supplies are small and intermittent, and also where packing facilities are too inadequate to provide a constant market, country buying is more important. Some American farmers have been opposed to the development of public stockyards, believing that they have secured better prices when the packers buy at the farm or at the ranches.

Where livestock is furnished in volume and the chief consuming markets are at distant points, it is difficult to organise the business on a small scale, because the animals must be handled in large numbers to keep down production costs and to eliminate waste. In the United States, which affords the most outstanding example, livestock products must be shipped in carloads and even in train loads to keep down costs. Along with this an extensive distributing organisation has been provided to get meats into the hands of retailers and consumers in the best possible condition. That is the real reason why the large packing company has been developed in the United States, and also in the Argentine. In the latter country, which has become an outstanding source of supply of raw materials, the packing house products must be carried thousands of miles to the markets of Europe, whereas the American packers find their principal markets within a distance of a thousand or fifteen hundred miles. Denmark can successfully operate the smaller type of plant because livestock is produced close to the consuming markets. It may perhaps be concluded that the chief reason for the existence of large-scale packing is found in the fact that it has hitherto been in a position to handle to advantage long-distance business. As population increases, medium sized companies can operate with success, because they specialise on local business, and may even engage in the long-distance trade. In addition to these two types there are thousands of country butcher shops which come into competition with the medium-sized packers and the very large plants. From the stand-point of consumers, considerable advantages have come from competition between large-scale producers and the smaller plants and country butchers. The large packers compete actively against each other, as also do the medium sized packers. There is also considerable competition between local butchers in their several communities. It is impossible dogmatically to assert that large scale packing will continue, however, to be the most economical and efficient type of plant for catering

to the requirements of consumers, and serving the needs of producers. In this connection it is interesting to observe that while the large packers handled an increasing proportion of the livestock of the United States during the War, since 1919 the tendency has been in the opposite direction. In that year, the five large packers of the United States handled 69 per cent. of all animals killed under federal inspection, but by 1922 this had dropped to 59 per cent., indicating a substantial decrease. This has been due in part to the fact that the smaller plants have not been obliged to go to the expense of developing great sales organisations, which are necessary for long-distance business. In the United States also this change in development has been brought about in part by high freight rates, which have added to the costs of distance shipments. It is alleged, also, that the smaller packers have been able to keep down their expenses by paying lower wages and working the men longer hours.

While, from the standpoint of sales, the packing industry is the largest on the Continent, other industries, including the iron and steel industry, and the cotton manufacturing industry, have much heavier total investments, and also have much larger labour forces. Nevertheless, the value of products is a very important consideration, especially when the products are so widely used. It may be added that the packing business is complicated by the fact that the raw materials are not finished as a single product. On the contrary, the raw material, which is itself a highly developed organism, must be so processed as to produce a wide variety of products. This fact has already received consideration, but it is important to notice that it has a marked influence on the operating methods of the industry, its accounting methods, and its methods of selling products. The industry has been obliged to develop its own accounting methods, because while animals are purchased as units, they are sold as parts, some in the form of meats and some as byproducts. This diversity of production, also referred to above, greatly complicates marketing problems, for the packer cannot sell bacon, hides and fertiliser through the same trade channels. Therefore, specialised sales departments must be developed to deal with retailers, wholesalers and manufacturers. The chief marketing operations of packers, however, have to do with the sale of meats. During the early days of packing in the Republic, cured meats were sold largely through brokers and wholesalers, and there developed on the Chicago Board of Trade a system of future trading in provisions. The advantages claimed for this system were that it furnished a steady outlet for the sale of pork products, and made it possible to reduce risks by hedging operations. Gradually, as the packers undertook more and more the selling of their products, and as the demand for salt pork declined, the packers came to rely to a less extent on the Board of Trade. While future trading in lard and provisions still continues, it does not play the important rôle of former days. By developing great distributing organisations, packers are able to keep in touch with actual requirements of various consuming centres, and thus to adjust supplies to demand. From some points of view, the development of this marketing service is more thorough than can be found in any other industry. Branch houses are

equipped with refrigerators, and each has its own manager, corps of salesmen, meat handlers and accountants. In most cases actual deliveries are made to retailers in the large centres; but in many of the small towns which cannot be reached by branch houses, direct shipments are forwarded from the packing plants. Salesmen call on retailers in the towns in their territory, and the orders are sent to the home office. Goods shipped under these conditions follow what is known in the industry as "car routes." It is significant that in the case of the large packers distribution forms such an important part of the total business undertaken that more than one-half of the expenses of the meat part of their business is incurred for freight costs and selling costs.

The large packers have practically no control over the purchase of raw materials, although this does not hold true to the same extent of the small packers. Also, it is not so true in those sections of the country where livestock is not produced in large quantity, and where there are no available stockyards. On the whole, it must be said that the large packing companies, located at the chief market centres, must purchase all the livestock that is shipped to these markets. Receipts vary greatly from season to season, from month to month, from week to week, and even from day to day. Manufacturers of other commodities may buy as much or as little of the raw materials as they desire, and when they want it. That is not true of the packing industry. Supplies depend upon shipments from the farm, and over these the packers have no control. The packers never know from week to week how many animals they will handle during the following week, or the number of men who must be employed. For this reason, it is difficult to plan ahead for meat shipments.

Nothing but good can follow efforts on the part of primary producers so to relate their supplies to the market as to prevent, if possible, great discrepancies in price fluctuations. True, primary producers have little or no control over ultimate demand in Great Britain or the United States, and it is that ultimate effective demand that makes prices for Canadian farmers. It is possible, however, for producers to relate more effectively their supplies to market demand, and by so doing help to maintain more uniform prices at primary markets. Fluctuating prices caused by wide variations in supplies of livestock not only embarrass the packers but are discouraging to farmers, who are never quite sure just what they will obtain for their shipments when these reach the market. At times the individual farmer strikes a falling market and is inclined to believe that somebody has artificially depressed the price. When farmers are fortunate to market supplies on a rising market, such complaints cease. Undoubtedly, Western farmers can help to stabilise prices both by producing in steadier volume, and by marketing that volume under unified control. Their own central selling agency will be in a position to guide them as to when to forward supplies, and when to hold them back until required. Admittedly, there are many difficulties in the way of this programme, as noted in previous discussion, but it should be possible for farmers through their own united efforts to greatly improve marketing conditions in the West.

Another peculiarity of the packing industry, important enough to receive special emphasis, is that the packer is not in a position to set the price for the product, as is done in certain other "controlled" industries. Fresh meat is a highly perishable product, and must be sold within two or three weeks after the purchase of the livestock, although it is true that beef can be held for a month or longer before it is finally consumed, a common practice with the restaurant and hotel business. Nevertheless, perishability of the product is a factor which compels meats to be sold at whatever price can be obtained. The big packers, when they ship carloads of beef to the Eastern market, cannot instruct their Eastern managers to hold the product for a certain price. That price must depend upon the economic conditions that operate at the time the product is offered for sale. Of course, there is greater discretion in the marketing of supplies of cured pork products, because they are not so perishable as fresh meats. It is debatable, however, as to how long even some cured meats can be held. Tinned products may be held over considerable periods, but Canadian bacon must be marketed within a reasonable time in the British market to conserve its delicate flavour. It is, however, a fortunate thing that cured meats may be held, especially cured hams, because hogs are marketed in largest quantities during the winter, followed by relative scarcity during the summer and early fall. To the extent that products may be stored, and made available during the summer, prices for hogs during the winter can be better maintained.

The determination of livestock prices is a very difficult and complex problem. Many farmers are of the opinion that the packers have had it in their power to raise or lower prices at their will, while some consumers have been inclined to charge the packers with having the same power over meat prices. Others again trace a direct connection between the price of meat and the price of livestock. The fundamental fact, however, is that livestock prices depend primarily on the value of meat and its byproducts, meat being the most important product. The value of meat becomes adjusted through competitive bidding in open markets at a price sufficient to move the available supply into consumption. If, as in the British market, supplies are poured into the market the price must come down to move such supplies into consumption. Also, it is clear, that the demand for meat plays a very important part in price-making. Labour unrest, unemployment, lowered purchasing power of the masses, all have their effects on pork products and beef prices. It is easy to understand from a study of market reports that supplies of livestock fluctuate daily, and such variations in supply may be concretely estimated. There is, however, no such physical measure of the variations in demand. Even if Western farmers could make weekly supplies absolutely uniform throughout the year, there still would be price fluctuations, because of differences in demand for meat products from day to day, and in one market as compared with another. Canadian packers are faced with the fact that if they hold out for higher prices in the English market they will have supplies left on their hands. Packers must clear existing supplies, and they can only do so by marketing the product at the price which consumers are willing and

able to pay. Prices will fluctuate from day to day, not only because of underlying economic conditions, such as the degree to which the masses are employed, but also because available supplies fluctuate from day to day. A study of the London market discloses the fact that competition plays a very important rôle in making prices, and the same holds true of large consuming centres in Canada and the United States. The price of one cut of meat may be rising, while the price of another is falling. Moreover, the price of choice beef may be strong in one section of the country and weak in another, because of temporary conditions of supply, conditions that may change overnight. The demand will also fluctuate because of weather variations, holiday seasons, etc., but many changes in the demand appear to be beyond explanation, especially if the product is sold in a distant market, where peculiar local customs make their effects felt. For these reasons, the packing industry is one in which management must regard the market situation from hour to hour, because changes occur in rapid succession. For these reasons, as has already been mentioned, the Danes are now emphasising business ability in the packing plant, when selecting managers, rather than scientific attainments and technical knowledge. They realise that high grade scientists may be secured without great difficulty, but that exceptional skill in management, upon which the real success of the enterprise depends, is the most difficult of all services to secure.

Primary producers, it may be repeated, can accomplish much by controlling and regulating supplies, but they have no control over demand. Therefore, they must learn how to relate their supplies to the best possible advantage to the existing demand. If livestock receipts are too heavy at any market centre, the tendency will be to depress prices. Where supplies of fresh meat are large, competition will force down prices until such supplies are passed into consumption. Salesmen must keep prices at a level that will pass the product into consumption. Since demand is not constant for packing house products, fluctuating prices must follow. Under these conditions, the price of livestock will tend to follow the prices of meats and byproducts, or rather, the prices that packers think they will be able to get when meats are marketed a few days after livestock is received, and when cured meats and byproducts are offered for sale some weeks or months later. When the price of byproducts falls, as for example, when hides fell in 1920 from 50c to 10c a pound, there was also a decline in the prices of livestock. It was impossible to make up the loss on hides by increasing meat prices, because such a policy would have decreased meat consumption. It must be borne in mind that farmers secure a price for livestock that must be related to the value of all the products derived therefrom. Over long periods of time, low livestock prices will discourage production, supplies of meat and byproducts will be curtailed, and the prices of both livestock and livestock products must again rise to bring forward essential supplies.

PART II

The Cattle Industry



Landing of cattle imported from Australia.—British Columbia.

PART II

The Cattle Industry

CHAPTER XVI.

THE CANADIAN CATTLE INDUSTRY.

THE CANADIAN CATTLE INDUSTRY AND EXTERNAL COMPETITION.

Along with swine, sheep and other kinds of livestock, cattle are becoming of greater importance in Canadian agricultural economy. The cattle industry has suffered materially, from the standpoint of prices, since the close of the war; but undoubtedly, by taking advantage of available export markets either in the United States or in Great Britain, it has again come into its own. It goes without saying that the great packing industry of Canada rests upon the production of quality livestock in sufficient volume to serve its requirements, and that, therefore, profitable production on the farm is a matter of import not only to primary producers but to packers as well. By properly co-ordinating production, processing and distributing, gains should come to the farming community and also to Canadian industry and the consuming population. From this point of view, each interest can prosper only as the other interests connected with the livestock industry also prosper, and all groups combined have a direct interest in the efficiency with which the livestock industry from the farm to the final phase of distributing functions. It is, therefore, imperative that efficiency be combined with profitable farm production, and that the right contacts be established with consuming markets, if the industry as a whole is to flourish.

Certain primary conditions may first of all receive due emphasis. It is obvious that the supplies of livestock should be sufficiently large to permit the profitable utilisation of available packing plant capacity, in order to sustain the market and assure the farmer a fair return for his labour. Again, the supplies of livestock, while perhaps varying necessarily with seasonal production and demand, should be distributed throughout the year as evenly as possible, to utilise farms and factories and distributing machinery to the best advantage. And finally, the type of livestock produced, with respect to size, quality and finish should meet the requirements of the great consuming markets. It should be added, that even in the most highly developed livestock areas of this Continent, whether in Canada or the United States, or in the Argentine or Australia, none of these ideal requirements is being met at the present time. Cattle, like swine, are not being marketed as evenly as they should be; and the character of the livestock, while showing steady improvements, still does not measure up to the requirements, especially of the British market.

In the United States, livestock has become the greatest single finished product of the farm, and it must assume a similar position in the future in Canada. In the United States, however, packing has been carried to such a degree of development that it can absorb practically all the receipts offered on the markets, while in Canada consumption lags behind production, and farmers must look for markets abroad. Hitherto, once the grower had loaded his livestock upon the train, control passed largely out of his hands. From that point on, the responsibility of processing, merchandising and retailing the product became the responsibility of others. From the standpoint of the farmer, the livestock was a finished product, into which he had put his labour and raw materials. As farmers become more interested in controlling the marketing process to secure a larger share of the consumer's dollar, however, they are beginning to realise the importance of following their product to the packing plants, or to external markets. With this development, just as the packing industry has become highly specialised and organised, so livestock production must become specialised and organised, if producers are to make further gains.

It may be observed in passing that the West is following quickly the type of development which has become characteristic of American livestock production. Frontier agriculture, with free land, unlimited range and poor transportation facilities is giving way to settled development and highly organised farming on a commercial scale. With the passing of the frontier conditions, it is now becoming possible to organise production more efficiently and to work out new methods of marketing to take advantage of great modern markets. It has now become vital that the farmer should carefully study costs in relation to selling prices, because the days of cheap range production have practically ceased. Under pioneer conditions, the farmer, or rather rancher, was not obliged to operate to the same extent as today, under financial pressure. At the present time, with the growing value of land, with the tendency toward specialised production on the farm, with growth of urban population, and with the transportation of farm commodities long distances to market, it becomes essential properly to relate costs to market prices. Specialisation has not been carried so far as in the United States, where swine areas, dairy cattle regions and sheep areas concentrate upon production for the market. In the United States some regions produce the steer, while the finishing process is carried on elsewhere, and hogs are grown in the regions best adapted to the production of corn. More and more, somewhat similar specialisation in livestock production will be undertaken on Western farms. The production of quality cattle and swine will demand a close study of costs, because coarse, byproduct roughage, which formerly went to the production of livestock, is now being supplemented by an extensive use of grain. Thus production on the farm becomes in a sense a manufacturing enterprise. The producer operating the large farm which is characteristic of the prairies, has heavy capital investments, incurs extensive labour costs, and expenses of various kinds. It is

not possible, therefore, to produce hogs, steers and other livestock on the basis that characterised frontier production, because the modern producer has a great deal to lose.

Uniformity of production has proved impossible in the past, for various reasons. Supplies of livestock vary greatly, not only during the year, but from year to year. Yearly variations are determined mainly by the prices realised by producers, and in turn these prices are determined by economic conditions both at home and abroad, which influence the demand for livestock products. It is clear, also, that climatic conditions which have such an important bearing upon the quality and volume of crops in the West, also influence costs of feeds, and thus raise or lower the cost of production. Simply stated, profits are the controlling factor determining livestock production as between one year and another. To encourage the primary producer to bring forward supplies to the market, prices must at least cover production costs. In a general way, then, the volume of production will fluctuate with price changes. These wide fluctuations in the supply present serious cost problems to the packers, for it is evident that overhead costs continue for them whether production be great or small. It is not possible to secure reliable data giving actual production on Western farms, but receipts at market centres form a fairly reliable index of farm supplies. An examination of such statistics will reveal how greatly the production of swine and cattle fluctuates as between one year and another on Canadian farms.

It is evident that livestock supplies can never be adjusted with anything approaching the precision that raw materials may be adjusted to certain other manufacturing enterprises. Livestock is produced on many individual farms, and on wide areas of range land in the West. Therefore, even if necessary yearly supplies could be accurately estimated, it would not be possible to bring them forward to the market, because of the difficulty of controlling production as among widely scattered farms. Something, however, can be done along this line by providing farmers with reliable market information, and statistics bearing on conditions of consumption both at home and abroad.

It is clear, also, that the question of providing the producer with adequate credit has an important bearing on production and marketing. Breeding and finishing involve heavy costs, and some of these costs are intensified at certain seasons of the year. Many farmers have found it difficult to finance their livestock enterprises during periods of high costs of feed, which are generally periods of low grain and forage production. It is imperative to provide Western producers with a more elastic system of farm credit, so that they may be encouraged to produce more uniformly and thus secure more orderly marketing. The short term type of credit, which characterises the financing of Western farm operations exposes the borrower to the danger of being called upon to liquidate his obligation at the bank at a period when he may be facing financial difficulties, due to high feed costs, crop failures, and the like. This has compelled him to send immature stock to the market. It is quite clear that the effect on the market is serious, be-

cause when the market is flooded prices are depressed. This merely accentuates the difficulties in which the producer is involved, because he not only sacrifices his livestock but finds it impossible to meet his obligations, in many instances, with the proceeds. If producers were given such terms of credit as were related to the normal turnover periods of livestock production, supplies coming to market would be stabilised, and the price, to that extent, protected. The United States has taken care of the financial interests of livestock producers in a much more specialised and effective way than has been done in Western Canada.

In studying the problem of marketing livestock, two special points should be kept in mind. First, the marketing period should correspond, as far as possible, to the season when there will be the greatest consumer demand. This is important in forwarding shipments to Great Britain, especially of stockers and feeders, which are to be finished by British farmers in time to catch the best market. Second, in producing for the home market, and also the markets of the United States, supplies should be distributed throughout the year in such a way as best to meet the requirements of the packing plants, and also the requirements of United States feeders. To a large extent, the marketing of Canadian livestock is seasonal, being related to the crop growing period. True, marketing must be related to crop production in a broad way; but it also should be related, if possible, to periods of heavy meat consumption. The development of packing, the building up of great central markets, the improvement of transportation, as well as more efficient methods of farming have all played their part in making for a more even distribution of livestock supplies throughout the year. One of the great problems facing producers, if they are to achieve success in merchandising farm products, is to discover not only the most profitable outlets, but the best time to make use of those outlets to secure the highest prices. This involves a study of seasonal requirements as well as the related problem of seasonal marketing, the avoidance of heavy runs, and the placing of supplies at different consuming centres in the right relation to effective demand.

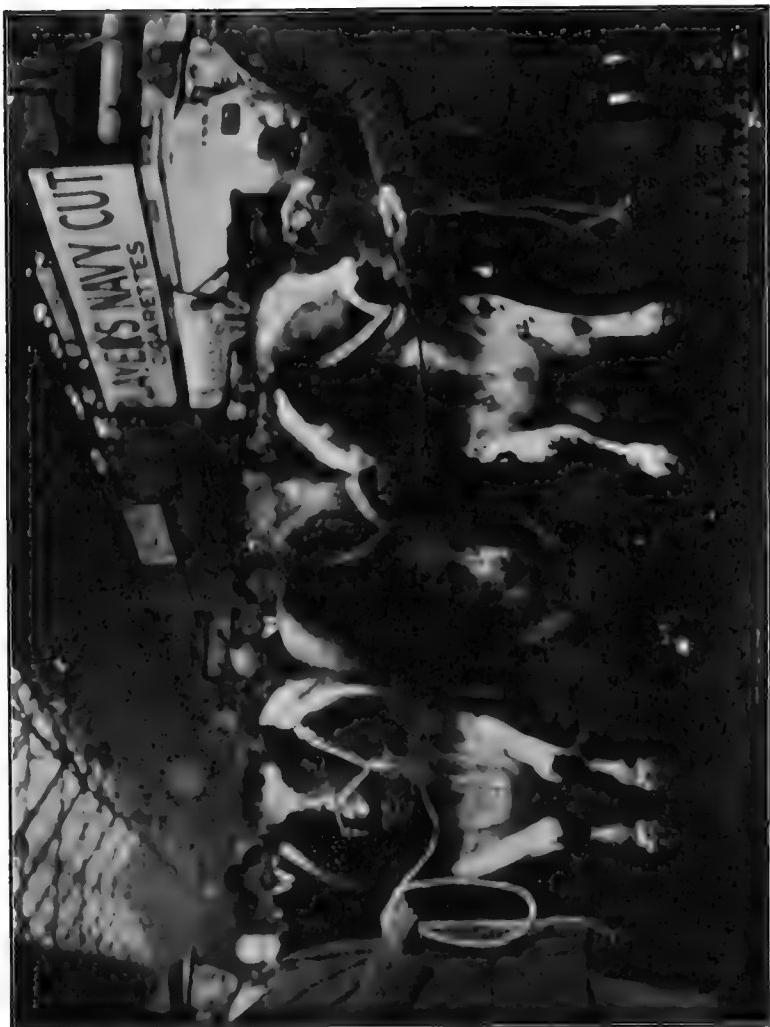
Equalising market receipts is a difficult problem, and even at the most highly developed central markets of the world has not yet been satisfactorily solved. Violent fluctuations in livestock receipts bring little or no advantage to buyers, while they impose many hardships on sellers. Fluctuations of this nature can benefit only the speculator who is not permanently connected either with production or processing. It is to the great disadvantage of packers and distributors who desire to build up a profitable business extending throughout the years, because violent price changes tend to discourage producers, and thus to decrease supplies. In a general way it may be said that packers realise that the closer prices are kept to a profitable basis, the greater their own gains, in the long run. Gluts and shortages, with corresponding fluctuations in price, have assuredly done more to discourage the producer in the past than any other conditions in the industry. The majority of farmers market their stock only once or twice a year; consequently, if their animals go on the market during a period of oversupply, with an accompanying price decrease, the profit of an

entire year disappears. Producers on the whole will do better with average prices secured by marketing their livestock in an orderly manner. It seems plain, from previous discussion, that the packer has little or no power to direct or control the flow of stock to market. Market flow is primarily a problem for the producer, and in its solution he must receive the assistance of the banks, the railroads, and the packing companies, the steamship companies, and all other agencies which are connected with the livestock trade. Up to the present time, co-operative marketing associations in the United States and Canada have had little effect upon the flow of livestock to market, but in this respect much should be accomplished through education and organisation. It is contended, of course, that centralised co-operative associations can meet with more success in handling wheat, cotton, tobacco, or some other crop, because, it is argued, livestock cannot be held when ready for the market. The argument runs that livestock cannot be warehoused and held off the market as can be done with the products above mentioned. Nevertheless, it appears reasonable to conclude that a well organised central livestock association can keep its members informed of market conditions, and influence production in some measure as between one season and another. On the other hand a central organisation may have sufficiently accurate data on the amount of stock being fed and finished by its members, and the approximate time when such stock will be ready for market. With these facts at its command it should be able to stabilise receipts at the markets in the West, and to make arrangements to export any available surplus. In the meantime, Western farmers should seek to inform themselves on the trend of market developments, both at home and abroad, so that they may be in a position intelligently to plan for future production. An examination of this problem involves not only a study of the market, but the kind of competition that must be overcome in entering that market on a profitable basis. As far as the British market is concerned, competition comes chiefly from Ireland and the Argentine Republic.

CHANGING CONDITIONS OF THE BRITISH MARKET: THE IRISH CATTLE TRADE.

Although the British market for the present has ceased to be an important factor in the Canadian cattle trade, it would be unwise to assume that this condition will continue. Great Britain has offered a splendid market for Canadian cattle in the past, and it may be expected that with the return of better economic conditions in Europe, this market will again be a valuable asset to the Canadian producer. In any event, it would be a short-sighted policy to concentrate on the United States market as an outlet for the exportable surplus, since it is always within the range of possibility that either economic conditions or hostile tariff enactments will close the American market to Canadian cattle. In examining the present market situation in Great Britain, and its possibilities, a brief study may be made of the underlying facts.

As has been shown in a special report on meat, issued from the Ministry of Agriculture and Fisheries (Cmnd. 1927), the net increase



Three Canadian Bullocks shown at York Agricultural Christmas Show, 1926.

in the numbers of cattle in Great Britain since the beginning of the present century has been very small, being less than 1 per cent. From 1900 to 1923 cattle increased from 6,805,000 to 6,869,000, while the numbers of sheep declined during the same period by nearly 25 per cent. to 20,122,000. The number of pigs has remained fairly constant during the same period, the total of 2,450,000 recorded in 1922 being less than 3 per cent. in excess of the number held in 1900. In Ireland, the numbers of cattle increased from 4,609,000 in 1900 to 5,157,000 in 1922, while pigs fell away from 1,269,000 to 1,037,000. Relatively, Ireland made greater progress during these years with respect to livestock holdings than Great Britain, and although there may be fluctuations in Irish contributions to British beef, mutton and pork supplies, Ireland will continue undoubtedly a chief source of supply for the British market in the years to come. The increase in the population of Great Britain and Ireland, however, has not been accompanied by corresponding increase in the flocks and herds. To meet the deficiency in home supplies increasing quantities of meat are imported from various parts of the globe. Livestock may be shipped alive and slaughtered upon arrival, as in the case of cattle, and to a smaller extent sheep and lambs, from Canada and the United States. As has been already noted, supplies may be forwarded now only as cured meat from neighbouring European countries, and in this shape compete with bacon and other pork products exported to England from Canada and the United States. In addition, meats come from the Argentine, New Zealand and Australia, in a "chilled" or "frozen" condition.

Attention should be drawn to the fact that British farmers are now selling their fat cattle at a much earlier age than formerly, and consequently at much lower weights. This change has come gradually in response to consumer demand. The Ministry of Agriculture calculates that the average weight of adult cattle, when slaughtered, stands at 616 lbs., whereas up to 1917 the average weight was 672 lbs. During the years 1917 to 1920, as a natural consequence of the War, the condition of all classes of livestock was relatively poor. Ireland is making every effort to produce a type of animal suited to the English market. Exports of cattle from Ireland to this market materially increased during the years 1911-1922, as has been indicated in previous figures. The depression in the Irish cattle trade, and the dead meat trade, will be temporary in nature, and will vanish with return of more normal conditions on the Continent and in the chilled meat trade.

Imports of meat into Great Britain are drawn mainly from distant sources, and must, therefore, be preserved by refrigeration. Imports of chilled and frozen beef amounted during 1922 to 536,000 tons, frozen mutton and lamb to 285,000 tons, and bacon, hams, and frozen salted pork to 383,000 tons. On the other hand, in that year, less than 50,000 cattle were imported, representing roughly 15,000 to 16,000 tons of fresh beef, while imports of fresh dead meat, chiefly for the London market, amounted to only 34,000 tons. Of this amount beef and veal comprised 4,000 tons, mutton and lamb 7,000 tons, and



Outside Chill Room.
Mersey Cattle Wharf, Birkenhead—Port of Liverpool.

pork 23,000 tons. With the embargo against fresh killed meat from the Continent, the British farmer naturally has secured a better market for his beef and pork products. With respect to the importation of beef, it is necessary to understand that imports of chilled, as compared with frozen beef have made rapid strides during recent years. During the War, the proportion of chilled beef was considerably decreased, but from 1922 to 1927, there was a great expansion in this trade. In the year 1922 chilled beef alone amounted to 299,064 tons out of a total 587,998 tons, including preserved, salted and fresh beef. It should be observed that the development of the chilled beef industry is of the utmost significance, as this form of refrigerated beef bears a much closer resemblance than frozen beef to the home killed article.

The decline in the exports of cattle from Ireland in 1925 was due in part to competition from chilled beef from the Argentine. Stated in terms of value, this decline amounted to £4,279,521. It should be added, that the exports of cattle from all Ireland for the two years 1924-25 amounted to 1,860,693 and were never exceeded in any two previous consecutive years except in 1923 and 1924, and in 1913 and 1914, when they reached 2,054,949 in response to the enormous demand following the outbreak of war. The exports of cattle in 1924 were the largest in any calendar year with the exception of 1913. It should be borne in mind also that there is a close relation between Irish cattle exports and the production of roots and hay in Great Britain, a factor which requires emphasis for an understanding of the Irish export situation. The increase or the decrease of exports of Irish stores, as between one year and another, coincides with an increase or decrease in the total quantity of hay and roots produced in Great Britain. Early information regarding grass and crop prospects in Great Britain is, accordingly, of great importance in the Irish cattle trade.

EXPORTS OF CATTLE FROM IRELAND AND PRODUCTION OF ROOTS AND HAY IN GREAT BRITAIN.

Year	Cattle from Ireland in thousands			Roots and hay in Great Britain in thousands of tons	
	Fat	Stores	All cattle	Gross weight	Starch equivalent
	No.	No.	No.	Tons	Tons
1901	262	345	643	34,807	3,591
1902	307	557	960	43,586	4,788
1903	247	557	899	36,868	4,250
1904	232	471	773	39,890	4,415
1905	225	456	750	38,285	4,109
1906	241	474	776	39,751	4,273
1907	292	494	843	41,452	4,690
1908	259	529	863	42,485	4,655
1909	266	506	839	43,063	4,482
1910	260	544	869	44,565	4,778
1911	270	390	696	31,059	3,408
1912	337	194	555	38,134	4,226
1913	355	693	1,110	37,772	4,358
1914	456	449	945	35,858	3,918
1915	364	441	842	34,582	3,695
1916	425	443	890	36,137	4,213
1917	405	448	889	37,212	4,064
1918	376	320	720	33,416	3,647
1919	532	225	765	30,540	3,173
1920	453	446	927	38,374	4,269
1921	377	352	768	26,151	2,876
1922	421	527	980	33,074	3,474
1923	284	503	813	33,006	3,777
1924	346	692	1,079	35,109	3,989
1925	248	497	782	31,136	3,542

To be sure, other factors will affect this correlation, such as very large or abnormally small herds of cattle in Great Britain or in Ireland, imports of chilled beef from abroad, and so forth. The following table, which gives the number of cattle in Great Britain during the period 1909-1925, will throw some light on the extent to which exports of store cattle from Ireland are governed by cattle on British farms:

NUMBER OF CATTLE IN GREAT BRITAIN.
(in thousands)

May 31	Cattle, other than dairy herd.			Total cattle
	2 years old and over*	1-2 years old	Under 1 year	
Average 1909-1913	1,367	1,492	1,401	7,033
1918	1,220	1,632	1,528	7,410
1919	1,416	1,555	1,445	7,424
1920	1,424	1,378	1,123	6,713
1921	1,248	1,126	1,341	6,660
1922	1,141	1,417	1,338	6,869
1923	1,261	1,374	1,311	7,017
1924	1,219	1,348	1,380	7,059
1925	1,314	1,455	1,436	7,368

* Including bulls but excluding heifers in calf

It will be seen from a study of the above figures, that one reason for the increase in the export of Irish cattle in 1922 and again in 1924 is apparent. The full effect of the heavy slaughter of calves in Great Britain in 1920, when the cattle herds under one year of age were decreased by 322,000, was felt in 1922, when beef cattle two years and over in Great Britain numbered only 1,141,000—the lowest level since similar statistics were first collected in 1867. In 1924, in spite of the high spring export of stores from Ireland, the number of beef cattle two years and over in Great Britain was the third lowest on record, exceeding only the number of 1922 and 1914. In 1922 and 1924, also, excellent forage crops in Great Britain stimulated the exports of cattle from Ireland. Exports were abnormally large in 1914, due to the outbreak of hostilities, even though forage crops in Great Britain were not especially good.

In June, 1925, there were unusually small herds in Ireland, cattle numbering 347,000 less than in 1924. On the other hand, there were unusually large herds in Great Britain, amounting to 309,000 cattle more than in 1924, and 335,000 more than the average for 1909-1913. At the same time, there was a poor crop of hay and roots in Great Britain, amounting to 3,973,000 tons less than in 1924. These causes, together with an additional 31,000 cattle imported from Canada, contributed in 1925 to decreasing the exports of Irish stores.

In the late 'seventies, exports of Irish stores fell off under pressure from falling prices, and all exports of Irish cattle remained fairly steady until the middle of the 'nineties. From that time forward, there was a comparatively steady upward movement of exports, due to an increase in exports of stores up to about 1910; from that date on, the increase was due largely to the export of fat cattle. Exports of stores increased from an average of 336,000, or 52 per cent. of total cattle exports, in the period 1889-1893, to 509,000, or 61 per cent. of the total exports

in 1906-1910. This increase coincided with the placing of the embargo on the importation of Canadian stores into Great Britain dating from November 21, 1892. Increased exports of fat cattle from 1912 on were largely due to shipments of animals less mature than formerly, destined for immediate slaughter. Many of these would have been included formerly in the returns as stores.

After the embargo was placed on the admission of Canadian stores in 1892, total imports of cattle into Great Britain from Canada fell slightly for a short period, but they rose from 82,323 in 1894 to a maximum of 190,802 in 1903. Canadian imports fell away to 1,755 in 1913, after which there were no imports until 1921, when they numbered 31,792. In 1925, they reached 110,155. These figures



Irish Store Cattle arriving on the Norwich Cattle Market.

indicate how important the British market has been for the Canadian cattle trade in the past, and the value of that market to Canadian farmers for a considerable period even after the imposition of the embargo against Canadian stores in 1892.

The imposition of the British embargo in November, 1892, and the lifting of the embargo on April 1, 1923, along with the effects of increases in the United States tariff in July, 1897, its abolition in October, 1913, and the imposition of a 30 per cent. ad valorem tariff in May, 1921, all reacted on the Irish cattle trade. During the War, Canadian competition was offset by heavy exports from Canada to the United States.

It is important to notice, also, how closely the relative numbers of Irish fats and stores exported to Great Britain are affected by the relative prices of each. As the price of stores relatively tends to increase, exports of this type of animal will also tend to follow such

price increase. The correspondence between price and type of animal exported from Ireland to Great Britain, during the period 1885 to 1906, was very close. From 1917 on, the terms "fat" and "store" to some extent changed their meaning, especially during the War, due to the export for slaughter of immature animals.

It is approximately correct to say that half the number of cattle in Great Britain and Ireland under two years of age in June of any year gives an estimate of the supplies of British and Irish cattle available for slaughter one or two years later. Along with this estimate must be taken the imports of chilled and frozen beef, to secure an understanding of the relation of supply to the market. Such imports have been increasing, and are now equal to the supplies of beef fattened in Great Britain and Ireland. During the War, as was to be expected, imports of beef fell away, but home supplies for the market increased. By 1920 imports of fresh, chilled and frozen beef rose to higher than the pre-war level, and have since continued rapidly to increase.

In recent years, two out of every five cattle slaughtered in Great Britain have been produced in Ireland, yet the export of cattle fattened in Ireland is but a very small fraction of the total supplies of beef consumed in Great Britain. Therefore, the prices of fat cattle from Ireland are largely dependent on the prices and supplies of chilled and frozen beef in the British market. An examination of supplies of cattle, chilled and frozen beef, and the prices at which the latter sell, indicates that both over long periods, and short swings of the market in Ireland, prices of Irish beef are closely related to the prices at which chilled and frozen beef sells in the British market.

It is necessary to bear in mind that the quality of imported beef has undergone important changes, beginning with 1900. Chilled beef is superior in quality to frozen beef, and bears a much greater resemblance than the latter to the home-killed article. Imports of chilled beef constituted about 65 per cent. of total beef imports according to weight in 1901-1905, although the proportion declined to 50 per cent. from 1909 to 1913. During the War and up to 1920, the proportion of chilled beef in total imports fell away considerably. Since that year supplies of chilled beef have greatly increased, rising from a proportion of 10 per cent. of total beef imports in 1920 to 66 per cent. in 1924 and in 1925. Not only the quantity, but the comparatively low price of this kind of beef had much to do with discouraging cattle production in Ireland during the past two years. Hard economic conditions in Great Britain, together with the effects of the general strike, have tended to place chilled beef in a preferred position, because of its excellent quality and low price. Indeed, one of the most serious problems which Irish and British farmers must face, is to devise methods of restoring the home-killed product to its former position of eminence. There was some increase in the price of chilled beef in 1925 as compared with 1924, which pointed to an increased demand for this commodity. Since 1925, however, the collapse of prices for prime quality chilled beef, due to different factors, such as the general strike, continued unemployment in the mining industry, and the struggle for supremacy between British and

American packers in the Argentine, has brought about a serious situation for Irish and British livestock producers. This question is exhaustively considered in the "Proceedings Before the Royal Commission on the Importation of Store Cattle" (Cmd. 1541), published in 1921. Particularly important evidence was given by Mr. T. P. Gill, Sir Daniel Hall, Sir Robert Greig and Mr. J. B. Guild.

From figures prepared by the Department of Industry and Commerce of the Irish Free State (Trade and Shipping Statistics, Vol. 11, No. 4, pp. xiv-xv), it is found that exports of cattle increased by 3.6 per cent., eggs by 7.8 per cent., and hides by 3.9 per cent., in 1925, over the averages for 1911-1913. There were substantial decreases, however, in 1925, amounting for sheep and lambs to 34.9 per cent., butter 38.2 per cent., pigs 70.1 per cent., bacon and hams 38.5 per cent., poultry 37.9 per cent., and horses 34.5 per cent., as compared with the average for 1911-1913. It should be added that the volume of exports from the Irish Free State in 1925 was the lowest for many years, due in large part to competition from Denmark. As already explained, Danish exports to Great Britain fell away greatly during the War and up to 1919; but by 1922 they had regained their pre-war dimensions. During the three years 1914-1916, Denmark's volume of exports to all countries was slightly above the 1913 level; from 1917 to 1919 exports to Great Britain fell away, and while the decline was made good in part by increased exports to Germany and other countries, nevertheless Denmark's total exports to all countries had fallen to about 60 per cent. of their pre-war volume in 1917, and to about 40 per cent., in 1918 and 1919. Ireland's war-time experience was much more fortunate. As in the case of Denmark, her volume of exports was greater in the years 1914 to 1916 than the 1911-1913 average. From 1917 to 1919, Ireland's volume of exports, while less than the pre-war average in each year, never fell as low as 85 per cent. of that average. Reference has already been made to the fact that the Irish Free State has a somewhat smaller population than Denmark, but has 50 per cent. more cultivable land, although the Free State ploughs only a little over one-third of the land ploughed in Denmark. Attention may again be drawn to the fact that Denmark, in 1924, had a net export per 1,000 acres of cultivable land of £7,074, as compared with £2,024 for the Irish Free State, but had to import per 1,000 acres £2,347 of the cheaper food stuffs for man and animals, as compared with £896 imported by the Irish Free State.

Reference has also been made to the fact that Ireland's exports of cattle, butter, eggs, poultry, etc., are seasonal. There is necessarily a close relation between exports and prices, for as exports reach a maximum there is a tendency for prices to decline. While prices and supplies, therefore, tend to move in opposite directions, the total value of exports tends to follow the total volume of trade. The following table will give some understanding as to the reason why Great Britain must import large quantities of meat and of milk derivatives from other countries than Ireland. It also indicates who are the chief com-

petitors of the Irish Free State in supplying the demands of the British market, with the exception, of course, of the principal competitor—the British farmer:

NUMBERS OF MEAT AND MILK ANIMALS IN EACH COUNTRY.
PER 100 INHABITANTS.

Country	Year	Per 100 persons			Milch cows	
		*Cattle No.	Sheep No.	Pigs No.	Per 100 persons No.	as % of total cattle %
Denmark	1925	82	8	76	41	50
Irish Free State	1925	126	89	23	37	30
Northern Ireland	1924	52	38	9	18	36
Great Britain	1925	17	53	6	6	37
Netherlands	1921	29	9	21	15	53
Belgium	1924	21	2	15	11	52
Switzerland	1921	37	6	16	19	52
Germany	1925	28	8	26	10	37
Austria	1923	33	9	23	16	50
France	1924	36	26	15	19	53
Norway	1924	41	55	9	28	69
Canada	1925	106	31	50	44	41
U. S. of America	1926	54	37	46	20	37
Argentina	1922	388	379	15	35	9
Australia	1922	249	1,371	17	42	17
New Zealand	1925	258	1,810	32	87	34

* Including milch cows.

The above table indicates that the Free State has a larger number of cattle and sheep per 100 persons than any of the European countries, and more than Canada and the United States, but much less than the Argentine, Australia and New Zealand. The supply of pigs, though much smaller than in Denmark, is greater than in any of the other European countries except Germany and Austria, and greater than in the Argentine and Australia, but less than in Canada, the United States and New Zealand. The number of milch cows per 100 persons is somewhat less than in Denmark, but much greater than in any of the other European countries and in the United States, it is greater than in the Argentine (1922), but less than in Canada, Australia and New Zealand. In considering surplus supplies of butter and other milk derivatives, the yield of milk per cow is as important as the number of cows. The yield per cow in the Irish Free State is low, and although the exports of butter from the Free State are large, they are in reality small as compared with the size of the dairy herd, or as compared with exports of live cattle.

An examination of the statistics presented by the Department of Industry and Commerce of the Irish Free State, to which reference has already been made, will show that there is no livestock trade between

any two countries in the world which approaches the dimensions of that between the Irish Free State and Great Britain and Northern Ireland. In the group "Cattle and Beef (chilled and frozen)", the Irish Free State is second to Argentina, and is a long way in advance of the third country, Canada. In the group "Sheep and Mutton," the Irish Free State is fourth, its supplies being exceeded by those of New Zealand, Argentina and Australia. Of "Pig and Pig Products," the supplies, in 1925, secured from the Free State for the British market, were less than those from Denmark, the United States, Canada, and the Netherlands. In butter, Irish exports were exceeded by those of Denmark, New Zealand, Australia and the Argentine; in eggs, by Denmark alone. In 1925 the value of the supplies of poultry secured



At the Chantilly Stud Farm near Dublin.

R. A. Wright, with Asst. Livestock Commissioner Capt. C. S. McCarthy, of the Irish Free State, on his left.

from the Free State was over twice as great as the value of the imports from France, its strongest competitor.

In 1925, also, the Irish Free State sold goods, on a per capita basis, valued at £13 14s. to Great Britain and Northern Ireland. This was much below the figure for New Zealand and Denmark, but greater than that for Australia, Argentina, Canada, and all other countries. With respect to purchases from Great Britain and Northern Ireland, the Irish Free State, per capita, came second, buying goods valued at £12 14s. from that source. Australia came third and other countries far behind. It is dangerous, of course, to draw general conclusions based upon such figures, because the total volume and value of trade are more important considerations than per capita figures.

IMPROVEMENT OF IRISH LIVESTOCK.

The Irish Free State is making every effort to improve the quality of livestock held on the average farm, and to that end has passed various acts bearing upon the improvement of breeds of horses, cattle, swine and dairy cattle. The Government of Northern Ireland has adopted a similar programme, with a view to decreasing waste and improving the quality of products exported to the British market. In 1927 a scheme was launched by the Irish Free State designed to encourage the improvement of cattle breeding, by inducing farmers and others to keep suitable bulls of a high degree of excellence. In arranging the details of this scheme to suit local requirements, the various county committees were requested to secure to small farmers as large a share of the resulting benefits as was practicable. All details of the work carried on by county committees must receive the sanction of the Department of Agriculture at Dublin. Without going into details, it may be said that premiums will be provided for bulls of the following breeds, viz., Shorthorn, registered dairy, Aberdeen Angus, Hereford, Kerry and Galloway. Only bulls entered, or qualified by pedigree for entry in the herd book of their respective breeds, or in the department's Register of Dairy Cattle, shall be eligible for premiums. In distributing purebred bulls, the committee must have regard to the needs of the various districts of the county.

With a view also to encouraging the improvement of purebred dairy cattle in Ireland, the department will keep a register of purebred cattle, in which purebred cows of any dairy breed and their progeny may be entered, subject to the provisions of the scheme. Cows will be inspected for general appearance, and tested for quality and quantity of milk. In order to qualify for registration, a cow must give during a milk period a calculated yield of not less than 225 pounds of butter fat, provided that the average of the tests for butter fat in the milk does not fall below 3 per cent., nor the calculated yield of milk below 6,000 pounds. Exceptions are made for the Kerry and Jersey breeds.

In outlining the various schemes for encouraging improvement in the breeding of cattle, the Department of Agriculture draws attention to the fact that dairying and the raising of store cattle constitute two of the principal branches of agriculture in Ireland. It is considered, therefore, a matter of the first importance that the milking properties of Irish cattle shall be preserved and improved; and that the good milk cow should be of the type likely to produce a calf which will prove of value for beef purposes, in case it is not required for the dairy herd. Attention is drawn to the necessity of ascertaining the milking capacities of the various animals, and of weeding out all cows whose yields of milk and butter fat fall below the standard necessary to provide a fair profit, after allowing for cost of production. The Department of Agriculture formed for this purpose a number of cow testing associations, which enable their members to ascertain both the quantity and quality of the milk yielded by each cow. In this way it will be possible to determine which cows are worth retaining in a herd, and which should be discarded. The department is prepared to provide lecturers

at meetings of farmers, for the purpose of explaining the objects and advantages of cow testing, and of giving advice and assistance in the formation of associations.

Much is being done also to improve Irish breeds of swine, particularly under Scheme No. 3 of the Department of Agriculture. The main object of this scheme is to improve swine breeding by inducing farmers to keep suitable boars of a high degree of excellence. In this plan, also, the details are given over to the County Committees of Agricultural and Technical Instruction, and County Committees of Agriculture. In a general way it is proposed to provide premiums for boars of the following breeds, viz.: Irish Large White, for all counties, and Large White Ulster for the Counties of Cavan, Donegal, Leitrim, Louth, and Monaghan. Only boars entered in the herd book of their respective breeds shall be eligible for premiums. It is not necessary to enter into further aspects of this scheme; it will suffice to say that a far reaching programme of livestock improvement is under way both in Northern Ireland and in the Free State.

In addition to improvement plans, an endeavour is being made to control, and indeed prohibit, the use of sires that are a menace to either the cattle or the swine industry. Under *The Livestock Breeding Act*, 1925, any person keeping or having in his possession any bull of the prescribed age, without a license or permit, was made liable to a heavy penalty. The persons who may be prosecuted are the owner of the bull, any person to whom it has been lent or hired, and the owner or person having the management of the lands on which the animal was kept. In other words a comprehensive use is now made by the Free State of the license system, under which sires are examined, approved, or weeded out of the herds. There are other special provisions of the Act into which it is unnecessary for present purposes to enter. The main fact to be kept in mind is that Ireland, both North and South, is beginning to put into effect a comprehensive plan of control of cattle breeding, designed to improve the quality of herds, and thus place as many as possible of the small producers in a position to compete on favourable terms with foreign competitors in the British market.

LIVESTOCK PRODUCTION IN NORTHERN IRELAND.

As in the Free State, comprehensive schemes are being put forward in Northern Ireland with the object of improving the quality of livestock, and at the same time, if possible, reducing costs of production. Particular reference may be made to the scheme for encouraging improvement in the breeds of cattle, as approved by the Ministry of Agriculture, in 1927. The main object of this scheme is to promote improved cattle breeding, by inducing owners to keep suitable and sound sires of a high degree of excellence, and by encouraging farmers to retain their best young heifers for breeding purposes. As in the Free State, also, committees supervise the programme, and arrange details to suit local requirements. Each county committee, however, is expected to secure to small farmers as large a share as possible of the resulting

benefits, and the plan must first receive the sanction of the ministry before being put into operation. Under this scheme provision is made for the payment of premiums for selected sires, but the committee may supply animals of premium standard of the approved breeds at reduced prices to selected applicants in the poorer districts of the county. It is also provided that sires may be owned by any society or association of farmers, as well as individuals; but in such case, premiums shall be paid to the society, and not to the individual in whose charge the sires are placed. Subject to the approval of the ministry premiums may be provided for bulls of the following breeds, viz.: Shorthorn, Registered Dairy Shorthorn, Registered Dairy Non-Pedigree, Abcrdeen Angus, Hereford and Galloway. Sires of the Galloway breed are not eligible for premiums if placed in a locality outside the eastern mountainous area of County Antrim. Only bulls entered, or having qualifications for entry, in the herd books of their respective breeds, or in the Ministry's Register of Dairy Cattle, shall be eligible for premiums. It is not necessary for present purposes to enter into further details of this programme, such as the classification of bulls, inspection of the animals, allocation of premiums, and the like. It must suffice to draw attention to the fact that such a programme, if intelligently carried into effect, must raise the standards of Irish cattle.

A somewhat similar plan was introduced in 1927, for the improvement of swine breeding. Owners of boars, under this programme, are encouraged to keep suitable sires of high quality, and farmers are also induced to retain their best young sows for breeding purposes. This scheme is also operated under committee management, whereby premiums are paid for selected boars of the Large White Ulster and Large White York breeds. It may be added that only animals eligible for entry in the herd books or registers of their respective breeds shall receive premiums. Further details of this plan are not essential for the purpose of this study, but attention may be drawn to the fact that in Northern Ireland, as in the Irish Free State, a serious effort is being made to place swine at the same high standard that obtains in Denmark.

FURTHER LIVESTOCK EXPERIMENTS.

Under the comprehensive programme of the Ministry of Agriculture of Northern Ireland for 1926-1927, plans were made to conduct experiments in the best methods of producing various grains, as well as hay, potatoes, mangels, turnips, clover and various grasses. Experiments were under way also to discover the extent that old, poor pastures could be renovated, by the application of phosphates to the land, or liquid manure to hay meadows, etc. Meetings are arranged for farmers during the summer months at such demonstration centres, whereby opportunity is given of indicating the importance of the various varieties of grains and grasses, the value of different fertilisers, methods of cultivation, and so forth. Special attention is given to the improvement of the oat crop, as this grain is of basic importance in the farm economy of Ireland. Interesting experiments are being undertaken also to ascertain the residual effect of nitrogen and organic matter collected

by wild white clover. In all these experiments, Ireland is making an intelligent study of the difficulties of production with which the average farmer is confronted. To this end, the experiments are conducted over wide areas, in soils of poor, or average quality, as well as in soils of high fertility. One of the most striking facts impressed upon the observer of Irish agriculture, is the remarkable extent to which the country, under Government supervision and leadership, is turning to the use of science and enlightened farm management for the solving of its rural economic problems.

In addition to the policy of "control," which has been outlined above, important experiments are also being undertaken, designed better to relate livestock supplies to market requirements. An important development along this line is the "Baby Beef" experiment of 1927-1928, of Northern Ireland. Its object is to obtain information on the economic possibility of feeding calves for the production of "Baby Beef." For this purpose, calves are divided into two classes: Calves fed for sale as stores at from 12 to 16 months old, and calves fed for sale as beef at from 12 to 16 months old. At the different experiment centres, each lot shall consist of three calves, if possible, and where eight suitable and evenly-balanced calves are available, four animals shall be placed in each lot. All such animals must be, as nearly as possible, of the same weight and of the same age. Also, the breeding of the calves must be known, and they must have been produced in the locality where the experiment is being carried forward. It is also provided that the animals shall not differ in age by more than six weeks, and shall be selected, if possible, from calves born in the months of January, February or March. It is desirable that all the calves in the experiment shall be bullocks, but if this is not possible the sexes must be evenly balanced.

Calves selected shall be fed similarly until the start of the experiment, during the interval between March and October, at which latter date the experiment shall begin. Throughout the experimental period each lot shall receive as much hay, or hay and straw and turnips as the animals can consume, hay being given a preference to straw. The animals to be sold as stores shall be given an allowance of a mixture of equal parts of crushed oats and maize meal, the quantity being so fed to amount to between one and two pounds daily. Calves to be finished as "Baby Beef" shall receive an allowance of the following mixture of concentrates:

- 2 parts by weight, crushed oats;
- 1 part by weight, maize meal;
- 2 parts by weight, linseed cake;
- 2 parts by weight, palm nut cake.

This concentrated food commences with an allowance of not less than $1\frac{1}{2}$ lbs. per head per day, to be increased according to the manner in which the animals thrive. The amount so fed, however, must not exceed, at any stage, 8 lbs. per head per day. A careful record is kept of the concentrated food consumed by both lots, and also the dates on which the daily allowance of concentrates are increased. The animals are given as much water as they will drink. The stores are allowed on

pasture daily, but the beef lots must not be put out after the experiment starts. For conducting the experiments, subsidies are granted by the Government, amounting to £1 10s. per animal, with a maximum expenditure of £10, which should include £1 to the attendant.

Similar pig feeding experiments of a most interesting and profitable character are being conducted in Ireland. Under the scheme in Northern Ireland, the object is to compare the relative merits of outdoor and indoor fattening. In a general way, the conditions provide for experiments on three lots of pigs as follows:

- LOT 1. fed in house on a mixture of moistened uncooked meals
- LOT 2. fed on pasture in the open on the same mixture of meals as for the above lot, but brought into the house to be finished.
- LOT 3. fed on pasture in open throughout the entire experimental period on the same mixture of meals as for Lot 1

The moistened meal mixture fed to Lot 1 is placed in an ordinary open trough, and as much as the pigs will readily clean up is given at each feed. With lots 2 and 3, the meal mixture is fed dry from an automatic feeder, and the quantity is unrestricted. When potatoes are fed, each lot receives equal quantities. Lots 2 and 3 may be allowed to run and feed together until the pigs are within one month of the finishing stage, when the pigs are separated after being weighed. One of the two lots is then transferred to a house where feeding on dry food from an automatic feeder is continued until the finishing stage, while the other lot is finished in the open. Where pigs are taken from two or more litters, a preliminary period of two weeks precedes the start of the experiment, during which time all the pigs run together. Pigs are not more than 12 weeks old at the start of the experiment. The meal mixture may consist of either of the following:

1st MIXTURE

3 parts by weight, maize meal;
 2½ parts by weight, barley meal;
 2½ parts by weight, palm nut meal;
 2 parts by weight, pollard,
 separated, skim or buttermilk, if available

2nd MIXTURE

7 parts by weight, maize meal,
 5 parts by weight, palm kernel meal;
 5 parts by weight, pollard;
 2 parts by weight, ground oats;
 1 part by weight, meat meal

The Government also grants subsidies to carry on the above type of experiments, as well as other experiments, to determine the value of a mixture of minerals, with and without added protein, in the fattening of pigs. The object of all these experiments is to provide farmers with reliable data which they can use to advantage in improving conditions of production on the farm. It is only necessary to add in this connection, that under the Act of 1922 (*Livestock Breeding Act*) severe restrictions are imposed on the keeping of animals as sires, to the end that only bulls, boars, etc., of high grade shall be used for Irish animal husbandry. Like most enactments intended to accelerate

progress, the Act encroaches to some extent on the liberty of the individual. Its restrictions, however, are directed against the careless and indifferent farmer who, by keeping an inferior sire, would counteract the efforts of the state and of local authorities to improve the livestock in his district. It may be observed that Switzerland, one of the most democratic countries in Europe, has had a law of this kind in operation for many years, which has produced good results without hardship to the farming community. In Northern Ireland in 1926 there were 2,211 purebred bulls. The numbers are gradually increasing, and many farmers are being encouraged to keep purebred animals because of the greater demand for pedigree bulls brought about by the enforcement of the above Act.

Although the necessary facilities for research and experimental work on problems of animal nutrition do not as yet exist in Northern Ireland, the ministry reports that preliminary arrangements for the establishment of an experimental farm at Hillsborough have been completed, and that in the near future adequate facilities for investigation of problems of animal nutrition, perhaps the most important aspect of Irish agricultural industry, will be available. In the meantime, this work is carried forward on local farms, and has received splendid support from the farmers who have facilities to place at the disposal of the division. There can be no doubt that the farmers of Ireland are becoming keenly alive to the great possibilities of the livestock aspect of agriculture, and in particular to the important part which nutrition plays in the successful development of animal husbandry. For example, under the stimulus given by experiments conducted under the direction of the ministry, an increasing number of farmers are marketing their young cattle as "baby beef," and regular sales are now being held at the principal Belfast livestock auction markets. At the last special sale of "baby beef" cattle the entries were much more numerous than in the previous year.

ADDITIONAL AGRICULTURAL AIDS.

As in the Irish Free State, the Government of Northern Ireland, by using precept and example, is giving enlightened leadership to the rural community. Certain loans have been made to farmers for the purchase of sires, other livestock and agricultural machinery, though much remains to be done in the field of short term credits throughout Ireland to place the farmer in a position to take advantage of his opportunities. In addition the Government has introduced a programme of itinerant instruction in agriculture, providing winter agricultural classes, and the carrying on of instruction at agricultural and horticultural colleges and at the University. Special instruction is given to dairymen at the Ulster Dairy School. As already noted many agricultural experiments in field and animal husbandry are being conducted, and the results are placed at the disposal of practical farmers. Research is being pushed forward in the field of animal nutrition, in seed testing and the study of plant diseases, animal diseases and plant breeding. Special instruction is offered in poultry husbandry. Marketing problems are receiving more or less attention, especially in

connection with the marketing of eggs, the stabilisation of pork prices, and the horticultural products. As explained elsewhere, *The Merchandise Marks Act* of 1926 is designed, as in England, to protect the home producer. Limits of space will not permit of a detailed examination of the many other interesting and significant activities of the Ministry of Agriculture of Northern Ireland. Perhaps its best work is at present being done in connection with cattle breeding, swine breeding and sheep breeding, along with the registration of dairy cattle and the formation of milk recording associations.

OTHER SOURCES OF SUPPLY FOR THE BRITISH MARKET.

Attention has already been drawn to the fact that, under the stimulus given by the Empire Marketing Board, British consumers are being taught to demand the products of the Empire. Nevertheless, many obstacles are in the way of improving Empire trade with Great Britain, one of the most outstanding being due to the fact that Great Britain, as a creditor nation, has made heavy investments in the pioneer countries of the New World, particularly in the Argentine, as well as in Australia, New Zealand, Asia and elsewhere. With respect to the Argentine, the safety of these investments rests in large part upon the successful development of agriculture in that country, to afford traffic to the railways and steamship companies, and business to the banks. There is thus a strong financial British interest linked up with the development of trade between the Argentine and the United Kingdom. As observed above, however, there is a growing sentiment in Great Britain for Empire trading, which is being deepened and widened by the activities of the Empire Marketing Board. These activities should be supplemented by a well organised Dominion scheme for advertising Canadian products. In previous discussion of this problem much is made of the appropriation made by the Federal Parliament to encourage the sale of Canadian products in Great Britain, and perhaps sufficient has been said by way of justifying and emphasising the importance of this programme. It was explained also that Canada might expect keener competition in the British market, and this point of view has already been justified by the event. On the Continent, producers, more or less under Government supervision, are organising to meet the expected increase in competition from Canada, New Zealand, Australia and other parts of the Empire. It is, therefore, essential to improve the general reputation of Canada's food products, and likewise to improve our relative position among the Dominions, neither of which today is on a satisfactory basis. New Zealand has accomplished a great deal to improve conditions in its meat industry, by adopting a marketing plan, some of the details of which have already been presented. Australia, by Commonwealth legislation, has established a Dairy Board, after taking a plebiscite of the producers. Authority is given to provide revenue up to the extent of one-sixteenth of a cent per pound of butter and one-thirty-second of a cent per pound of cheese. Along with provision for advertising, the board has authority to negotiate on a national basis concerning rail, ocean, insurance, storage, port and dock rates. In a somewhat similar manner

legislation for the Australian fruit and vegetable industry has been introduced, whereby a levy is made upon each case of fruit exported with a view to providing funds for advertising Australian fresh fruits in the United Kingdom. The Commonwealth Government is contributing on a pound for pound basis with the Australian dried fruit industry, up to a maximum of £50,000, for advertising purposes. This subject has received sufficient treatment to indicate the urgent importance of organising the sale of Canadian farm produce on an efficient basis for the British market.

The high hopes of Canadian farmers, which were centred upon an expansion of the cattle trade with Great Britain following the removal of the embargo in 1922, after receiving considerable encourage-



*Electrical conveyance of meat, Alexandra Branch Dock No. 2,
Port of Liverpool.*

ment, have been disappointed. This has been due to many factors, some of which have been sufficiently analysed, but more particularly to the great expansion of the chilled and frozen meat trade. According to the official estimates made by the British Ministry of Agriculture in June, 1926, the number of cattle in the United Kingdom was 12,083,300 head, which represented a small decrease of 39,700 head from June, 1925. Sheep at the same date were reported at 27,684,400 head, which represented an increase of 1,211,400 head over June, 1925. The increase in the number of sheep in the country followed a succession of three similar increases, and indicated that sheep farmers were making good the depletion which their flocks suffered during the War. As indicated from the above figures, herds of cattle

are not expanding to any extent; and it is alleged that British cattle raisers in recent years have not maintained the average level of the quality of beef produced off home pastures. It is considered, in some quarters, that this has been to some extent inevitable, due to the increasing number of dairy cattle required for the production of milk for a growing population. Nevertheless, in the purely beef herds, there does not seem to be quite the same high standard of quality that existed before the War. It is contended by leading livestock dealers, that British farmers must concentrate their efforts on the improving of the quality of their beef herds if they are to meet with success in meeting competition in the chilled beef and frozen meat trade. It is also contended, in addition to the above, that British farmers must breed, in larger numbers than in the past, an early maturing animal of medium size, to meet the growing demand for small joints. Notwithstanding competition from the chilled meat trade, there should always be a good market in Great Britain for prime quality home-killed beef at higher price than any imported beef can command. Nevertheless, that higher price may not be sufficient to take care of the higher costs of production in Great Britain, including wages, costs of feeds, and farm investments, as compared with costs of production on the ranges of the Argentine Republic. On the basis of the figures given above, it is calculated that the amount of home grown meat available for consumption in the United Kingdom during 1926 was 809,000 tons of beef and 296,600 tons of mutton and lamb. These figures show no wide discrepancy between the available supplies for 1925 and 1926.

As is well known, Great Britain secures large supplies of frozen mutton and lamb, and beef from Australia. With the exception of Queensland the weather conditions in Australia during 1926 were favourable. Generally speaking that country was well stocked with livestock, but owing to the comparatively low prices ruling, both for local consumption and for export, the growers took advantage of good pasture conditions, held back their stock, and did not press for heavy sales at the low prices prevailing. Owing to drought over a wide area in Queensland, the livestock industry in that state passed through a difficult period in 1926. Because of the poor condition of the animals it was some months before a sufficient number of fat cattle were available to permit the freezings works to open in 1927. During 1926 experiments were made in transporting chilled beef from Australia to England. Some of these shipments turned out in excellent condition, but the meat shipped at Brisbane reached the market in a poor condition. At the end of 1926 it was calculated that the number of cattle in Australia stood at approximately 12,704,954 head, as compared with 13,054,125 at the beginning of 1925. The number of sheep was estimated at 93,221,860 in 1926 as compared with 83,621,954 in 1925. The number of freezing works in Australia is fifty-four, with a combined freezing capacity of 6,600 cattle, 60,000 sheep and 77,000 lambs per day, and capable of storing 100,000 tons of meat. In 1926 Australia exported 13,515 tons of mutton, 26,401 tons of lamb and 63,031 tons of beef, the greater part of which entered the British market. In 1926 the United Kingdom imported from Australia 547,629 mutton

carcasses, 1,717,579 lamb carcasses and 474,014 beef quarters. It is therefore, clear that Australia is a very important source of meat supplies for Great Britain.

The position of the meat freezing industry in New Zealand was a very difficult one during 1926. Although prices paid to producers were considerably lower than in recent years, they were still too high for the freezing companies. In order to keep the plants running during the season, the companies were compelled to pay prices for livestock considerably higher than equivalent selling prices in London. A very interesting parallel might be drawn between manufacturing conditions in New Zealand during this period, and the situation which confronted Canadian packers, after domestic prices for hogs had got out of line with prevailing prices in the London market. New Zealand also is confronted with manufacturing problems which must be solved if its well-known brands of meat are to be marketed on favourable terms. Faulty dressing of lambs has considerably affected prices in past years, although New Zealand lamb carcasses bring a premium on the British market. It was calculated in 1926 that New Zealand had 24,904,993 head of sheep, while cattle numbered 3,452,486 head, showing a slight decrease as compared with the figures for 1925. The number of freezing works operating for export in the dominion was thirty-four, with a killing capacity of 3,220 cattle and 128,800 sheep per day, and capable of storing a total of about 160,000 tons of meat. In addition there were other plants lying idle, which were capable of being utilised at short notice. Exports for 1926 amounted to 2,029,079 carcasses of mutton, 5,049,057 carcasses of lamb, and 197,884 quarters of beef, the greater part of which entered the markets of the United Kingdom.

As a source of meat supply to the United Kingdom, Canada plays a small part as compared with Australia and New Zealand. During 1926, 79,985 head of cattle on the hoof were shipped to Great Britain, showing a decrease of 30,883 head as compared with the number shipped in 1925. The overseas exports amounted to only 1,570 tons of meat, chiefly in boxes, as compared with 4,653 tons in 1925. Exports to the United States showed an increase of 6,000 head over 1925, but the exports for 1925 were about the lowest for many years. The export of beef to the United States totalled 7,250 tons as compared with 4,511 tons in 1925. The total number of farm livestock in June, 1926, was estimated to be 9,160,150 head of cattle, and 2,877,363 head of sheep. The above data are presented at this point merely by way of making a brief comparison with the conditions obtaining in the same year in Australia and New Zealand.

According to the last available estimate, dated August, 1925, the number of cattle in the Union of South Africa was 9,738,337 head, of which 3,078,284 head were owned by natives, and there were 32,005,627 sheep. Rhodesia possessed about 2,100,000 cattle, half of which belonged to the natives. South Africa possesses a number of freezing plants, but their combined capacity is comparatively small. The total exports of the country during 1926 were 15,184 tons of frozen beef. These exports were forwarded to England, Italy, France, Belgium and

Germany. A number of small trial shipments of cattle on the hoof were made to Genoa, Birkenhead and Hamburg, all from Rhodesia. It is considered that the prospects of the South African beef industry are still obscure. Little of the beef exported is of a quality suitable for the English market, as the local markets can easily absorb all the first class beef produced, at better prices than are obtainable by shipping to England. The Argentine Republic continues to be a most important source of supply of meat products for the United Kingdom, the year 1926 proving an exceptionally good one for fattening and rearing livestock. Pastures were in excellent condition as a result of good rains and favourable climatic conditions. The supply of fat cattle, however, was in excess of demand, and prices had fallen considerably below the average of 1925. Owing to these excellent conditions the freezing works were able to select their purchases, securing better, younger and fatter animals for their requirements. The last available figures for the Argentine show holdings of approximately 30,000,000 head of cattle and 35,000,000 sheep, but doubtless these figures have since been considerably increased. In a vast country like the Argentine the enumeration of flocks and herds is a difficult task, and only approximate estimates can be given. The Argentine Republic has wonderful natural conditions favourable to livestock production; but with respect to the factor of disease the climate of Canada affords a decided advantage. Argentina has recently been fairly free from foot-and-mouth disease, while scab on sheep, which in 1924 showed percentages as high as 10 to 15, has been brought under control. In 1926 the number of freezing works in the Argentine was seventeen, of which four were situated at Buenos Aires, five up the river, two at La Plata, one at Bahia Blanca, and five in Patagonia. The great new plant of the Frigorifico Anglo in Buenos Aires, which was under construction for two years, was opened in 1926. Also the Blue Star liner, "Almeda," one of the finest vessels in the South American trade, delivered her first cargo, 40,000 quarters of chilled beef, in 18 days, the meat reaching the Smithfield market in excellent condition. The Argentine exported 739,567 tons of meat in 1926, of which 579,145 tons were forwarded to the United Kingdom, and 160,422 tons to the Continent. There has been a tremendous expansion of the Argentine trade with Great Britain in mutton and lamb, frozen and chilled beef and offal, during the period 1922-1927. The total exports of meats during the period 1922-1926, were as follows:

	Mutton and lamb tons	Frozen Beef tons	Chilled Beef tons	Offal tons	Total tons
1922	72,976	132,523	263,836	23,846	493,181
1923	75,056	207,743	364,662	36,290	683,751
1924.....	73,542	325,230	388,599	46,945	831,316
1925.....	83,422	253,962	393,233	45,312	775,929
1926	50,544	176,387	457,397	55,239	739,567

As already explained, the export of United States beef to Europe is of small dimensions, although American packers regard that market as important for surplus supplies of pork, lard and other pig products. To some extent, the export supply of pork products is governed by domestic supplies of beef, higher beef prices tending to encourage the demand for other meats. The number of fat cattle killed in the United States in 1926 was greater than in any year since 1919, and the average weight of the animals was heavier and the quality of the meat somewhat higher. The number of cattle estimated to be on the farms on January 1, 1926, was 59,148,000 head,



Receiving meat by sling at ship's side. Port of Liverpool.

or 5,300,000 head less than the available numbers of 1920. Nevertheless, although the total herds of the United States are decreasing, the production of beef is actually expanding, due to more intensive methods of production which enable the growers to supply a greater weight of meat from a smaller number of animals. The demand for meat is also governed to some extent by the supply of hogs, the relation of the prices of pork and beef having an important influence upon the relative demand for each. Thus the domestic demand for United States beef fluctuates widely, and this in turn reacts upon primary production at the farm. On January 1, 1927, the total number of cattle in the United States was estimated by the Department of Agriculture at 57,521,000 head. This was 3 per cent. less than in 1926, and 1926

showed a decrease of 12.2 per cent. under the available supplies of 1920. It is evident, despite the tariff, that the United States, providing as it does an alternative outlet for Canadian livestock, must be an important factor in determining the volume of pork products and cattle that will be directed toward the British market.

FACTORS AFFECTING BRITISH MARKET DEMAND.

It is scarcely necessary to say that the prosperity of the British people is the underlying factor in the demand for meats and pork products. The long continued period of unemployment, heavy taxation, and the general strike of May, 1926, have all had serious results on the market. For over seven years approximately a million unemployed workers have been living on the dole, and in mining and transportation as well as in agriculture, profits have been seriously curtailed. When one recalls the sacrifices made by Great Britain in the War, its stupendous financial sacrifices as well as of man power, it is scarcely a matter of surprise that normal conditions of production and consumption have not as yet been restored. Without doubt improvement in the economic condition of the United Kingdom is being made, but progress in this direction will depend in large measure on the restoration of industrial and agricultural stability on the Continent, and the improvement of trading conditions throughout the world. This has been touched upon elsewhere, and requires at this point no further treatment.

The meat trade, like most other industries in Great Britain, suffered severely during 1926 from the effects of the miners' strike. Imported supplies were heavier than ever before, and it was inevitable that prices should be reduced in order to relate these supplies to the lower purchasing power of the people. Another factor, which had a serious effect upon the British market was the decline in the demand for imported meat on the Continent. Supplies of imported meat in the European countries were less urgent, due to the restoration, in part, of cattle herds, together with restrictions on imports in some countries, bad industrial conditions in others, and difficulties of exchange. All of these factors have tended to restrict the sale of frozen meat during the past three years on the Continent. From a total of 476,000 tons in 1924 the imports of frozen meat into the Continent dropped to 305,500 tons in 1926. As a result more beef came to England than the market could absorb, forcing a general reduction in the level of prices. The embargo placed upon the importation of fresh meat from the Continent as from May 1, 1926, put a stop to all importations of pork, mutton and veal from Holland and other countries. It was anticipated that there would be a shortage of supplies of the above products, and Australia, New Zealand and River Plate shippers sent considerable quantities of frozen pork and veal to the British market. The quality of these meats proved to be unsuitable, and most of the imports had to be disposed of for manufacturing purposes at unremunerative prices. On the other hand, exports of fresh meats being prohibited from the Continent, Holland and other countries entered the cured meat trade, and helped to create conditions in the bacon market that proved disastrous for Canadian packers.

The general average of prices for all descriptions of imported meat was lower than in 1925, but the most serious fall in prices occurred in the case of mutton and lamb. Leaders in the trade were of the opinion, however, that the market value of mutton and lamb had been kept at a relatively higher level, since the close of the War, than the prices of most other foodstuffs.

Messrs. W. Weddel & Co., Ltd., in their "Review of the Chilled and Frozen Meat Trade, 1926," present figures showing that if 100 is taken to indicate the average prices for frozen and chilled meat in 1913, the index figure for the year 1926 would stand at 134, as compared with 160 for 1925, 153 for 1924, and 147 for 1923. Thus the average price at which imported meats were sold in 1926 was 16 per cent. lower than in 1925, and only 34 per cent. above the pre-war level. Nevertheless, during 1926, for comparatively long periods the prices recorded week by week were strikingly regular—an unusual feature in the imported meat market. Values in this market, owing to quick changes in supply or demand, usually fluctuate almost daily. Supplies of mutton were almost constantly in excess of the demand, and difficulty was experienced in marketing the heavier carcasses. Under the pressure of low prices these supplies were moved into consumption, and the heavy accumulations in store in the beginning of the year finally disappeared. The depression of beef prices also had a serious effect on the prices of imported New Zealand and Australian lamb. Importation of frozen and chilled meat into the United Kingdom during 1926 amounted to 930,035 tons, as compared with 875,622 tons in 1924. It is believed that consumption of meat in Great Britain in 1926 was greater than in any previous year, although it was a year also of unparalleled industrial depression. This affords clear proof of the importance of the price factor in increasing, or decreasing, the demand for meat. Reduced supplies of frozen beef were counterbalanced by heavy increases of chilled beef imports from the River Plate. It seems to have been demonstrated that frozen beef cannot hold its own in the retail trade even when the competing chilled article is being disposed of at a considerably higher price. Imports of chilled beef from South America were not only larger with respect to number of quarters during 1926, but owing to the excellent climatic conditions in the Argentine and Uruguay, the average weight of the quarters was heavier than usual. According to the Board of Trade returns the total weights of the various descriptions of frozen and chilled meats imported into the United Kingdom during 1924-1926, as contrasted with the 1913 totals, together with the import values of the 1926 arrivals, were as follows:

TOTAL WEIGHTS FROZEN AND CHILLED MEATS IMPORTED INTO UNITED KINGDOM, 1913-1926.

From	1913	1924	1925	1926	Increase or Decrease in 1926 compared with 1925	Total import value 1926	Value per ton
					Australia	New Zealand	Argentina
Australia	150,666 tons	60,164 tons	95,091 tons	95,065 tons	-	26 tons	£ 4,855,191
New Zealand	122,234 tons	148,382 tons	151,159 tons	161,091 tons	+ 9,932 tons	10,873,907	= £51
Argentina	409,211 tons	587,347 tons	544,710 tons	583,712 tons	+ 39,002 tons	28,092,387	= 67
Uruguay	29,717 tons	61,443 tons	55,643 tons	64,135 tons	+ 8,492 tons	2,991,620	= 48
United States	74 tons	3,999 tons	4,730 tons	4,228 tons	- 502 tons	318,173	= 47
Other countries	8,355 tons	23,287 tons	35,320 tons	21,804 tons	-13,516 tons	1,068,033	= 75
Total	720,257 tons	875,822 tons	886,653 tons	930,035 tons	+ 43,382 tons	£48,198,311	= 49

CHAPTER XVII.

CANADIAN CATTLE EXPORT PROBLEMS.

CANADIAN CATTLE IN GREAT BRITAIN.

With the removal of the embargo against Canadian cattle, which was in force from 1892 to April 1, 1923, it was expected that the British market would be a material aid in making good the loss which had occurred through the imposition of the United States tariff on Canadian cattle exports to that country. As is well known the embargo was ostensibly instituted as a protection to British cattle against cattle-plague, pleuro-pneumonia, and foot-and-mouth disease; but, as a matter of fact, these diseases were practically unknown among Canadian cattle. Under the above prohibition, livestock from Canada was accepted for immediate slaughter only, and that at the port of landing. Under these conditions it was not possible to export from the Dominion cattle that would make prime beef of the quality required in Great Britain. As a result Canadian beef failed to secure that reputation to which it was entitled, and which would have been made possible had a finishing period on grass or in the feed lots of Great Britain been provided for. However, with the change that took place in import conditions through the removal of the embargo a new outlet was opened up for Canadian beef cattle. There was much discussion concerning the type of animal that should be forwarded to Great Britain, with respect to age, weight, and general conformation, and also with respect to the shipping of fat cattle or stores. The cost of ocean transportation was the same for a light or a heavy steer; and, under these conditions, it was naturally thought to be more profitable to export finished steers if possible. In some quarters, also, it was argued that cattle should be exported in the form of chilled beef, which would reduce transportation costs by concentrating the finished product, and would have the added advantage of building up a chilled meat industry in Canada, affording employment for labour and making use of domestic raw materials.

The removal of the embargo was welcomed by the Canadian producers and traders not only because it was expected to result in increasing the market demand for cattle, but also because it was an admission that an unwarranted stigma had been placed upon the health of Canadian livestock. It was expected, also, that many other misunderstandings resulting from the former British policy would be cleared away, and that Canada would be placed on an equal footing with Ireland as far as concerned exports to the British market. It developed, however, that while the British Government officially permitted the entry of store cattle into Great Britain, many vexatious quarantine and other restrictive regulations were imposed, which seriously hampered the trade. Consequently much dissatisfaction was felt by Canadian producers and traders, particularly in Western Canada, where the livestock industry was making considerable headway. It was always felt

in Canada that the embargo placed upon importations of Canadian store cattle in 1892 was merely disguised protection designed to aid British, and particularly Irish producers. Some justification for this view was given by the propaganda carried on in the British press in 1920, 1921 and 1922, to the effect that with the removal of the embargo Canada would ship to Great Britain annually some 400,000 cattle, and thus seriously jeopardise the position of the British cattle raiser. During those years, and since, low prices were severely affecting British farmers and strenuous efforts were made, through their organisations, to prevent the removal of the embargo. The British breeders openly admitted that the embargo had served practically as a protective tariff on Canadian stores. The removal of the embargo, while it did little or nothing by way of depressing British cattle prices in comparison with



Cattle Market, Norwich.

the importations of chilled and frozen meats, did not stimulate the Canadian export trade to the extent expected. Irish imports remained at a high figure as compared with imports from Canada during the years immediately following the removal of the embargo. Exports of live cattle from Canada for the following years ending March 31, were as follows:

Years	Number of cattle	Value
1923	25,758	\$ 2,809,796
1924	59,486	6,287,815
1925	86,245	9,125,667
1926	117,819	12,432,954

Irish export figures have been presented elsewhere, but for purposes of comparison, attention may be drawn again to the figures for 1922–1924:

EXPORTS OF IRISH CATTLE TO GREAT BRITAIN, 1922-1924.

Years	Number of cattle
1922	979,539
1923	811,640
1924	1,074,874

It is clear, therefore, that with respect to actual competition from Canadian supplies, the British farmer was not affected in the same degree as by competition from Ireland. The high cost of shipping and the scarcity of suitable tonnage during these years, militated against the Canadian cattle export trade with Great Britain. During this period the approximate cost of shipping a 1,200-pound bullock from Toronto, and selling it in Great Britain was about \$36.00. From Calgary the cost was about \$48.00. In other words, it cost the farmer of Eastern Canada 1½ pence per pound to market his bullock in Great Britain, and from Western Canada 2 pence per pound, live weight. That transportation cost in itself was a sufficient protection to the British farmer. It must be repeated that the real competition to British primary producers came, and is coming, in the form of importations of chilled and frozen meats. The effects of the United States tariff, which imposes a duty of 2 cents per pound on Canadian cattle, were scarcely as serious as high transportation costs on cattle destined for the British market.

The quarantine regulations, referred to above, imposed serious and irritating burdens upon the trade with Great Britain. It was provided that store cattle for export to British farms must be quarantined and isolated from all other cattle for 72 hours before embarkation on steamers. While on board the steamers, they were required to be partitioned off from cattle classified as "fats," even if the two lots came from the same farm. The 72-hour period of quarantine was a hardship to the Canadian shipper, because it frequently necessitated either delaying the steamer until the period of quarantine had elapsed, or else obliged shippers to forward store cattle as "fats." When shipped as "fats," Canadian cattle must, of course, under the British regulations, be slaughtered on arrival. Many of these cattle were not fit for immediate slaughter, and this imposed heavy losses on exporters and primary producers. It must be borne in mind that there was, and is, no period of quarantine required for Irish cattle before being exported to Great Britain.

These quarantine regulations held down Canadian exports to a minimum, and were, in part at least, again a disguised form of protection. The requirements that compelled cattle to be quarantined for three days before embarkation, the ocean voyage of from 9 to 12 days, and the high costs of transportation imposed severe restraints on the Canadian cattle trade. There is no justification for a preliminary period of quarantine in Canada, as Canadian cattle are free from disease. In addition, the British regulations require the Canadian Government to send a qualified veterinary inspector with each vessel carrying store cattle to Great Britain. This last item alone cost Canada, during 1924, approximately \$100,000.00. The large

number of officers required for this service assuredly imposes a serious burden on the Department of Agriculture. It may be added that no veterinary supervision is required for cattle in transit from Ireland to Great Britain. Furthermore, it seems reasonable that Canadian store cattle should be permitted to land at all ports open to Irish cattle. Under the regulations, Canadian store cattle were permitted to land at only two ports in Scotland and three in England. Moreover, since Canadian herds have been proved to be free from disease by the British authorities themselves, and since Canadian stores have carried no disease with them, there seems no good reason why Great Britain should not permit Canada to export female cattle into that country, which are quite as healthy as the males, since they are reared under the same conditions. There is no restriction as to sex on the importation of cattle from Ireland. It appears to Canadian producers that the regulations forbidding the exportation of Canadian cows and heifers to Great Britain as "stores" are unjustifiable. While, at the present time, the British market is of very little value as an outlet for Canadian live cattle, Canadian producers look toward the future, and hope and expect again to enter the British market under more favourable conditions. What Canada desires, in a word, is that the regulations governing the importation of Irish cattle into Great Britain shall also be applied to imports of Canadian stores. Canadian herds are remarkably free from disease. Also, from discussions with Scottish and English farmers, it appears safe to say that Canadian store cattle do equally as well, if not better than Irish on British farms, and it was stated that they gain more pounds in a given time than do the Irish cattle. There is no desire in Canada to have restrictions placed upon Irish imports, but it seems reasonable that Canada should receive the same treatment that is extended to a sister Dominion. This whole question was considered by the Imperial Economic Committee, of which Sir Halford Mackinder was chairman. In its report (page 32, par. 57) the following declaration was made:

"We feel, however, that apart from the restrictions imposed to prevent the introduction of disease, it is undesirable, from the standpoint of the interests of the United Kingdom consumer, and of the producer in the overseas parts of the Empire, to place restrictions on the entrance of store cattle: and we further feel that it is especially undesirable to differentiate in restrictive legislation between one Dominion and another, as at present. We, therefore, recommend that the existing legislation in reference to importation of live cattle into the United Kingdom be reconsidered."

It might be added that geographical and economic factors tend to draw Canada into closer trade relations with United States, and this despite tariff obstacles erected against the Dominion by that country. The preference granted by Canada on British imports has always been regarded by the industrialist as something of a sacrifice, and as a concession to Imperial sentiment. On the other hand, the British preference has received its strongest support from the farming population, and it is this class that has been penalised by British restrictive regulations. As is well known, it lay within the power of British

inspectors at the landing ports to decide the classifications of Canadian cattle into "fats" and "stores." Under their supervision, it was difficult to forward Canadian cattle to the feed lots for finishing. It was encouraging to observe that these regulations have now been liberalised, and British butchers and others may now secure Canadian cattle under terms that will permit them to finish the animals, and to market them under better conditions. Butchers securing Canadian stores must agree to keep them in the feed lot for a specified period before they are slaughtered. This more liberal interpretation of the regulations should, under the right conditions, improve the demand for Canadian stores not only from farmers but from inland butchers.

Inspection of herds on the Continent strikingly demonstrated the superiority of Canadian cattle from the standpoint of health and freedom from disease. Undoubtedly, this is one of Canada's greatest assets, and, with respect to health, places the Dominion in a preferred position as compared with Continental countries, Ireland, and the Argentine Republic. Conditions on the Continent in the first half of 1927, as stated by the British Ministry of Agriculture and Fisheries, disclose the prevalence of many animal diseases. These diseases included anthrax, cattle-plague in Russia; foot-and-mouth disease, particularly in Poland, Roumania and Russia; glanders, rabies, sheep pox and seab, tuberculosis, etc. The great asset of good health has done much to create a favourable impression of Canadian bullocks in Great Britain during the past five years. The favourable reasons making for a demand for Canadian cattle have been the following:

- (a) Their general good health;
- (b) The consistent and rapid gains made in weight, when the cattle have been fed in the yards or allowed to run on pasture;
- (c) The almost entire absence of individual animals that do not make a profitable gain;
- (d) The general better type of Canadian bullocks as compared with Irish bullocks, especially with respect to weight-making qualities;
- (e) The greater profit that has been made from offal from Canadian bullocks because of their freedom from disease, and consequent reduced condemnations by health officers.

Of course, there are some serious obstacles to be overcome in entering the British market with Canadian cattle. Analysing past shipments the following defects in the animals forwarded may be noted:

- (a) The cattle are from 6 to 12 months too old, and consequently too heavy;
- (b) They are often too fat for feeding purposes;
- (c) Many bullocks are too leggy and narrow;
- (d) Some are too coarse in the bone;
- (e) The practice of branding the cattle tends to make the hides unfit for the best leather trade. (The loss from this practice has been estimated at 15/- per bullock on all exports.);
- (f) Frequently some very wild bullocks are included in the shipment.

As pointed out by Mr. W. A. Wilson, Agricultural Products Representative for Canada, a splendid foundation has been laid for the extension of the Canadian cattle trade, when conditions warrant producers turning again to that market. Apart from the heavy transportation costs, particularly on the ocean, the outlook, with the restoration of better economic conditions in Europe, is promising. In this connection, it is well to consider carefully when shipments in volume are again made to the British market, whether it would be possible to make a more careful supervision and selection of cattle before permitting them to enter the British export trade. If it were possible to work out a plan permitting the exportation only of bullocks showing fair conformation, undoubtedly the demand for Canadian stores would be strengthened. This opens up a problem of wide magnitude, but it is a problem that should be seriously attacked by the Federal Government with a view to developing the best possible conditions for the export of Canadian cattle to Great Britain in the future.

SHIPPING CHILLED BEEF TO ENGLAND.

As already observed, from time to time, it is advocated that Canada should forward its cattle to England in the form of chilled beef. In the various experiments conducted by the Animal Husbandry Division, Dominion Experimental Farms, the results secured in shipping chilled beef were not favourable. The trial shipments made by large private commercial interests also failed to prove profitable. To obtain authentic information and data from carefully planned trial shipments, the Experimental Farms Branch inaugurated experimental shipments early in 1923, these being concerned chiefly with shipments of beef cattle by the Dominion Experimental Farms. With respect to chilled beef the trial shipment in the spring of 1923 brought such poor returns that it was considered inadvisable to continue these shipments, even on an experimental basis. The consensus of opinion of officials of the Department of Agriculture was that Canada, for the time being, would be better advised to ship cattle to Great Britain as live stores, in which there is little competition except from Irish shipments. The cattle collected for the experiment in forwarding chilled beef were selected from lots used in winter feeding experiments on the experimental farms at Ottawa, Lethbridge, Rosthern, Indian Head, Brandon, Lennoxville and Kentville. They were thus, generally speaking, representative of the class of cattle available for the overseas trade in the districts from which they came.

These cattle, amounting to 186 head, were collected at Montreal in the latter part of May, 1923. Coming from so many different districts the cattle represented all classes produced in Canada. The division has expressed the opinion that from an experimental point of view, this was an ideal arrangement, as it made possible comparisons which otherwise could not have been secured if the cattle had all been of the same grade. Of the lot of 186 head, 50 fat cattle were slaughtered at Montreal and shipped as chilled beef; 50 fat cattle were shipped alive; 80 store cattle were shipped alive; and 6 rough cattle were

- slaughtered and sold at Montreal. The cattle forwarded as chilled beef were selected from the farms, chiefly, situated at Lethbridge and Indian Head. The cattle from the Western farms and stations were shipped to the Winnipeg yards and there graded, the undesirable animals disposed of, and the remainder reshipped to Montreal. The Ottawa, Lennoxville, and Kentville steers were shipped to Montreal to arrive at approximately the same time as the Western steers. They were there graded into lots, and fed and watered. On arrival in England, two of the above classes were again subdivided, making in all six lots of cattle. The fifty fat cattle killed at Montreal were sold as chilled beef on the Smithfield market. Some of the fat cattle were killed immediately on arrival in England, and also sold on the Smithfield market as fresh beef, while a lot of twenty-five fat cattle were sold as stores on the Birkenhead and Norwich markets. Seventy-five store cattle, lighter and thinner than the above, were also sold as stores on the same market. Five rough steers, similar to the lot slaughtered in Montreal, were killed and sold as fresh meat on the Birkenhead market. For present purposes it will suffice to say that the twenty-five fat steers, average weight 1,296 pounds, killed as stores, realised a gross price of \$9.33 per cwt. on live weight in Montreal, and after taking into account cost of shipping to Montreal, the net price realised was \$8.58 per cwt. The seventy-five cattle, average weight 1,142 pounds, sold as stores, realised a gross price of \$8.03 per cwt. on live weight at Montreal, and after deducting average shipping costs to Montreal, realised the net price of \$7.18 per cwt. The receipts of sink (slaughter house by-products) on the cattle killed at Montreal yielded a return of 80c per cwt., or \$9.88 per steer. The receipts of sink of thirty store cattle killed at Birkenhead amounted to \$1.46 per cwt. based on the live weight at Montreal, or \$17.49 per steer.

The fifty steers selected for shipment as chilled beef were slaughtered at the Canadian Pacific Railway Abattoir, East End Stockyards, Montreal. They were a fairly uniform lot, averaging 1,252 pounds, and thus could all be classed as "fats." They dressed 60.4 per cent. It was reported that the dressed meat did not show the slightest evidence of bruising, notwithstanding the long railway journey some of the steers had experienced. To land meat in England in prime condition, every possible care was taken with the killing. Each carcass was carefully washed and dried before it went in to the cooler. Before being shipped, each side of the beef was covered with cheese cloth, and then wrapped in burlap. The meat was then cooled down to 32 degrees Fahrenheit, and was put alongside the steamer in iced cars at this temperature, thus preventing sweating on transferring to boat. The division points out that this procedure is absolutely necessary, for the only way chilled beef can be properly delivered at its destination in England is to keep it at a uniform temperature from the time it leaves the refrigerator at the abattoir until it is delivered at its destination. The following table, prepared under the direction of Mr. E. S. Archibald (Department of Agriculture, Bulletin No. 62, page 11) gives the details of expenses of killing and shipping this lot of chilled beef carcasses:

STATEMENT OF EXPENSES SHIPPING FIFTY CARCASSES CHILLED BEEF FROM EXPERIMENTAL FARM MENTIONED TO GREAT BRITAIN.

	Lethbridge	Indian Head	Winnipeg	Ottawa	Lennoxville	Kentville	Grand Totals
Number of steers							
Total cost of shipping to Montreal	\$25.89	87.06	151.18	8.06	14.37	2	50
Slaughtering charges \$2.00 each	36.00	12.00	28.00	8.00	12.00	4.00	602.19
Materials supplied for wrapping dressed beef for export (stockinette, burlap, etc.)							100.00
Extra labour wrapping and loading 200 quarters	38.19	12.71	29.80	8.49	12.71	4.24	106.14
Chilled beef (icing cars)	22.84	7.62	17.77	5.07	7.62	2.54	63.46
Loading charges (harbour swg. Port Warden, handling, wharfage)	38.16	12.72	29.66	8.48	12.72	4.24	105.98
Ocean freight	16.05	5.35	12.49	3.57	5.25	1.78	44.59
Marine insurance	182.87	60.95	142.23	40.63	60.95	.20.31	507.94
	27.00	9.00	21.00	6.00	9.00	3.60	75.00
Total to port of debarkation	\$687.00	\$207.41	\$332.13	\$88.30	\$134.72	\$55.74	\$1,605.30
Average per carcass	38.166	34.568	30.866	22.075	22.453	27.87	32.106

It will be noticed that there were heavy charges against the chilled beef in preparing it for shipment in Montreal and transporting it overseas, which in turn had its effect on the returns on the shipment as given in the above table.

From Liverpool the chilled beef was transferred to railway carriages and consigned to Parker & Fraser, at the Smithfield Market, London. Reports received stated that the quality of the beef met with much favour, but unfortunately it was marketed at a time when Argentine chilled beef was being "dumped" on the London market, the prices of the latter ruling very low. It was also reported that the weather was very warm at the time of delivery and retail demand slight. The division states that, to compare with the appearance of the Argentine chilled beef, the dressing of the Canadian beef at Montreal should have been improved. With experience in this trade there is no doubt that the preparing of the carcasses for market, with respect to manner of cutting, removal of bones, etc., could be placed on a basis equal to the process followed in the Argentine.

From selling prices there had to be deducted dock and town dues, railway charges, cartage, commission, etc. On the other hand, the returns from processing the entire steer were increased from offal sales, including hides, hearts, livers, fat, etc. The division reported that the fifty steers realised a gross price of \$3.93 per cwt. on live weight at Montreal, and after deducting shipping expenses, a net price of \$2.96 per cwt. This comparatively low price was accounted for, as stated above, in part by the condition of the meat as affected by dressing, and the market situation at the time the product was sold. It should be borne in mind that market values for live cattle may be relatively above values for meat, since cattle may go into the feed lot on pasture to be marketed as beef under improved conditions. Taking into account the production costs of chilled beef in Canada, and the competition such beef must meet with from the Argentine product which is produced at a lower cost, the conclusion must be reached that there is no prospect of building up a profitable Canadian trade in this commodity in the near future. The conclusion reached by the Animal Husbandry Division may be quoted as follows:

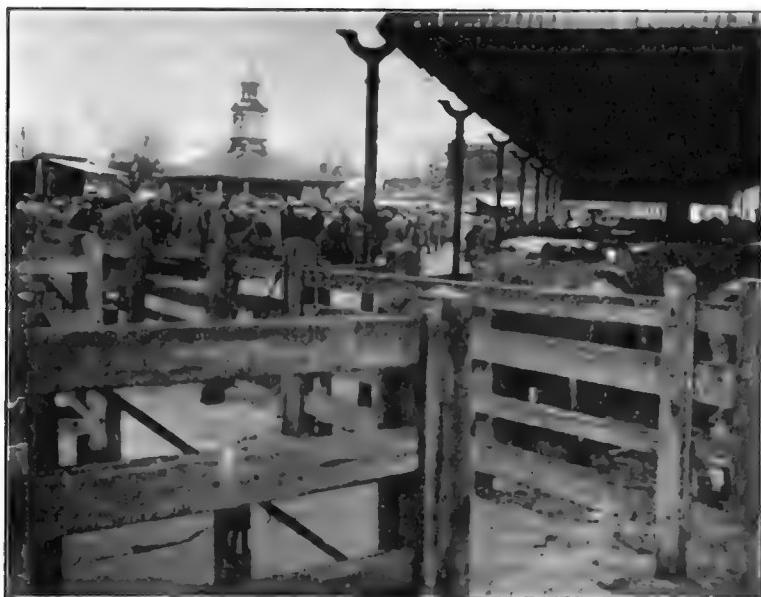
"To summarise this phase of the experiment, it may be said that the chilled beef shipment gave a decidedly poor return due to lack of uniformity and weight of carcasses; lack of knowledge of requirements of the Smithfield market as regards manner of slaughtering, trimming and quartering; and being sold on a very low market due to the dumping of Argentine chilled beef. Even had these agencies not been at work, the expense of shipping chilled beef coupled with the low returns for it as compared with the return for the live animals, makes the profitable shipment of chilled beef practically impossible."

LIVE CATTLE SHIPMENTS TO ENGLAND.

Before the British market was seriously disturbed by heavy importation of chilled beef from the Argentine, and bad industrial conditions, fairly profitable returns were secured on cattle exported from Canada. Experts in the Department of Agriculture consider that cattle ranging from 1½ to 3 years old may profitably be shipped to the British market under normal conditions. Such cattle, however, must be shipped at the proper time and in the proper condition. The

preference of the British feeder is for the younger steers, provided they are of good quality. Steers showing age cannot be readily sold as stores, and are usually immediately slaughtered. Consequently, if such animals are forwarded, they should be properly finished for the market.

Profitable returns have been secured on cattle ranging in weight from 900 lbs. to 1,350 lbs., but the steer that is likely to prove most profitable to the shipper is one which weighs between 1,100 and 1,200 lbs. At the same time, the conclusion was reached in discussing this problem with dealers at the various English and Scottish markets, that an even lighter steer of between 1,000 and 1,100 lbs. is preferred. From the Canadian producer's standpoint, it is costly to ship the lighter steers because of the handicap they are under in having to carry the same ocean freight rate as the heavier steers. Aberdeen Angus



Ipswich Cattle Market.

cattle, perhaps, work in most economically in this class. Steers under 1,000 lbs. are carried at a reduction of \$2.00 per head on ocean freight rates, so that if the animals in this class have quality they may be expected to yield a fair profit. Steers over 1,350 lbs. normally have passed the growing stage, and extra gains are made by laying on fat only. These are not looked upon favourably as stores, at least not so favourably as the light-weight steers.

The younger, lighter steers must be of good beef type and quality, since they are not sold for immediate slaughter. The British market absorbs this class of animal best during the months of February and March, as they can then be put on grass and finished by stall-feeding for the Christmas trade. The older and heavier steers must be in good flesh, but not fat, to meet the demand for short-keep stores. Select store types in this class need not be finished to the degree neces-

sary for the rougher types, for the former bring top prices as stores, while the latter are often sold for immediate slaughter. A careful study of the markets at Birkenhead, Glasgow and Aberdeen indicated that cattle showing undue age or roughness were under a heavy price handicap. If forwarded to Great Britain at all they should be well finished for immediate slaughter.

In connection with all the experimental shipments, made under conditions in which the Animal Husbandry Division exercised the greatest care, undoubted evidence was secured that beef type is an absolute necessity if profitable returns are to be had. The conclusions of the division are borne out by actual investigation of Canadian, Irish and other beef cattle on the British markets. The British feeder desires the short-legged, deep-bodied, blocky animal, and is willing to pay a premium for this type. When the British market is again able to absorb Canadian cattle on a profitable basis for domestic producers, great care should be taken to ship animals designed to find a market as stores, of the above type. It is upon the improvement of type that Canada must depend to establish its position in the store cattle trade in Great Britain.

With respect to breeds of cattle shipped, Aberdeen-Angus, Hereford and Shorthorn, or good grades or crosses of these are preferable, provided the correct beef type is also provided. Herefords intended as stores should be shipped in the spring for finishing off early grass, as they are exceptionally good grazing cattle. Apparently the British feeder does not care so much for the Hereford for stall-feeding purposes, as it is restless in confinement, and, therefore, does not do as well as steers of other breeds. If Herefords are shipped in the late summer they should be in good flesh to sell to the best advantage for immediate slaughter. Emphasis should also be placed upon the desire of the British buyer for uniformity, with respect to age, weight, colour, type, absence of horns, etc. Uniformity will always bring a better return than if the shipment includes a mixed lot.

Despite the low price of chilled beef, the British consumer has hitherto shown a marked preference for fresh beef, and with improved economic conditions this preference will again express itself in better demand at a higher price for the fresh article. Canada, therefore, cannot afford to abandon the British market, and centre its attention solely upon the United States as a profitable outlet for surplus supplies. The production of feeder cattle, and fat butcher stock, to augment the fresh beef supplies of the British Isles may become an integral part of Canadian livestock policy. The British consumer realises that Canadian imports could provide practically inexhaustible supplies to supplement the moderate home production. Scottish and English graziers have formed a high opinion of the excellent feeding qualities of Canadian bullocks. Good returns have been secured in the past by utilising pastures and grain through the medium of Canadian feeder cattle. At the same time this practice is important in maintaining a high state of fertility for British soils. Canada has a great heritage in climate, soil and geographical location; and these factors should make the country in time a great source of supply of livestock required

to build up in the British Isles a remunerative type of livestock finishing. Canadian cattle are thrifty, good feeders, and take on weight rapidly on British pastures. They provide the British farmers with raw material for further manufacturing, and with material also which promotes profitable byproducts industries, adds to the fertility of the soil, and benefits trade in many different directions.

Canadian fat cattle, ready for slaughter at ports of landing, are fattened under exceptionally good conditions as regards housing and feeding. Modern stable equipment is available at many Canadian farms, and is being added at others; and the standard byproducts from the great grain crops of Canada contribute toward the production of high quality beef. As noted elsewhere, discussion with British farmers demonstrates that the reputation of Canadian cattle for thriftiness and health is unexcelled; and these are the result of vigorous climate, Scottish and English ancestry of breed, and the exceptional qualities of Canadian prairie grazing grounds and pastures. A dry, cold winter with maximum sunshine, and a warm summer with not more than an adequate rainfall, have precluded epidemics of disease in any class of livestock. In addition, there is protection against imported diseases under a strict veterinary service, backed by sound legislation under *The Animal Contagious Diseases Act*. With better economic conditions on the Continent, consumption of chilled and frozen beef may increase, diminishing the supplies now going forward to Great Britain. In 1924, the Continent absorbed about 450,000 tons of beef, or about 70 per cent. of Great Britain's imports. As already observed, economic distress on the Continent, difficulties of exchange, and the embargo placed by Great Britain on importations of fresh meats, combined to reduce the demand for chilled and frozen beef in 1926 and 1927. Undoubtedly, some of these conditions will be reversed in the near future, and the Continent may again absorb larger supplies of the frozen and chilled commodity. Canada is merely at the beginning of its livestock industry. It has vast areas of grazing lands, enormous crop production, a wonderful climate for cattle production, and its nearness to the British market should make this country a logical source of supply for Great Britain in the years to come.

BRITISH FACILITIES FOR RECEIVING CANADIAN CATTLE.

An examination of the facilities provided by the various Port Authorities for taking care of Canadian cattle disclosed that, with regard to this aspect of the trade, much had been done. Indeed, it was a matter of keen disappointment that these facilities, involving the expenditure of immense sums of money, were in large part lying idle. Canadian farmers and dealers probably have not given adequate consideration to the vast expenditure made at the several British ports to take care of the Irish and Canadian cattle trade. At Cardiff and Bristol splendid equipment for taking care of the requirements of the Canadian cattle trade was unused, involving an annual overhead cost that must be a serious factor in the economical administration of these ports. In studying costs of shipping cattle to Great Britain, therefore, and estimating the relation of rail and water rates to the net returns

from the export cattle trade, one should not lose sight of the fact that the British port authorities, as well as the shipping companies, have incurred heavy losses through the collapse of this industry. From this standpoint it is urgently necessary that the Canadian cattle trade should be reconstituted as quickly as possible, in order that the shipping companies and the port officials may be encouraged to keep the essential facilities available and in the best condition to provide for the requirements of Canadian farmers and those concerned with the cattle industry in general. Among the ports visited by the commission were Cardiff, Bristol, Liverpool, Glasgow and Aberdeen. All these ports offer splendid and even quite exceptional facilities for the landing and handling of cattle. It was observed that the Manchester Ship Canal, a remarkable feat of engineering, brings the Port of Manchester in line with the seaports mentioned. The Port of Glasgow on the Clyde is easy of access to ocean-going boats, and large numbers of Canadian cattle are landed at this port. In inspecting the equipment at these several ports, one realised that the cattle trade should contribute materially to provide its share of the annual sum necessary to take care of the overhead on the enormous sums invested, as well as to provide some return to cover operating costs. This is essential for the permanent prosperity of the Canadian cattle trade, because the ports of Great Britain occupy relatively the same position in the national economy of the country as the railways occupy in the economy of Canada and the United States.

Without going into the history of these ports, a brief account of their importance to the Canadian cattle trade may be given. It is of interest to know that among the first works to be undertaken at Liverpool was the construction in 1859 of the Canada Dock, for the special accommodation of the timber trade. The Port of Liverpool includes the Birkenhead Docks, this amalgamation taking place in 1857, when the Mersey Docks and Harbour Board took over the control of all shipping facilities. From the Gladstone Dock at the north end of Liverpool to the Herculaneum Dock to the south, the river is fronted for a length of about 6½ miles by a system of docks and basins, having a water area of over 430 acres and a lineal quayage of over 27 miles of every type and variety, to provide accommodation necessary for the small coaster or the gigantic Atlantic liners that ply their trade at this great port. Extensive facilities will be added when the new Gladstone Half-Tide Dock and Branch Docks Nos. 1 and 2 are completed. On the opposite side of the Mersey are the Birkenhead Docks, having a water area of 172 acres, and ten miles of quay, which form a part of the whole Mersey system.

As Liverpool is the gateway of the Atlantic, a large number of ships arrive at that port laden with Canadian food products. Liverpool is the great grain port of Great Britain, and Liverpool Exchange prices are quoted in the grain trade papers. Its wool trade is also very large, and it has a huge warehouse to take care of colonial wool imports. Other Canadian food products that enter this port in volume are bacon, cheese, butter and eggs.

The cattle trade is conducted at the Mersey Cattle Wharf, where accommodation is provided for approximately 7,000 head of cattle and 22,000 sheep. There are also extensive chill rooms with a capacity for 3,380 carcasses, and slaughter house accommodation for 3,000 head of cattle and 7,000 sheep daily. The most modern equipment and improvements were observed and personal inspection bore out the claim that the wharf is one of the most complete and best appointed for the cattle trade in the United Kingdom. The following official figures with respect to facilities, etc., at the Mersey Cattle Wharf, Birkenhead, may be given to illustrate in a general way the extent of the equipment provided by British authorities:

MERSEY CATTLE WHARF—BIRKENHEAD.

Accommodation	7,000 cattle	22,000 sheep and pigs
Average loadings of Irish livestock for past five years:	250,000 cattle	27,000 pigs; 378,000 sheep
Foreign animals landed during 1924	29,787 fat cattle 4,252 sheep	22,406 Canadian store cattle
Record week's landing (1914)	17,101 cattle	(1918) 30,079 sheep
Record daily landing (1917)	4,878 cattle	(1913) 11,370 sheep

Slaughterhouse Accommodation

	No. of Houses	Slaughter capacity of cattle per day
Woodside	21	2,000
Wallasey	13	1,000
Wallasey	"B" Block	(sheep) 7,000 per day

Hanging Capacity—(including Refrigerators, Market, Cooling Rooms and Loading Rails):

Woodside	13,346 sides beef
Wallasey	7,200 sides beef
Wallasey	3,000 c/cs sheep

Because of its ship canal, opened in 1894, Manchester is not only a great commercial city, but is also the fourth port of importance in Great Britain, containing as it does nine docks, with a dock area of 406 acres. Steamship lines provide frequent and regular service with the Dominions. There are two terminal elevators with a combined capacity of 3,000,000 bushels, and also cold storage facilities of 2,000,000 cubic ft. capacity. The Trafford Park Cold Storage has 500,000 cubic ft. accommodation for hams and bacon alone, while another chamber, reserved for eggs, is capable of holding 7,000 boxes. On the south bank of the canal the Manchester Corporation has a foreign cattle depot with splendid transport facilities.

It is important to notice, from the standpoint of Canadian food export trade, that there is a huge population tributary to this port. Within a radius of 25 miles there are four and a half million people, or approximately half the population of Canada. Within a radius of 50 miles, the population amounts to ten and a half millions. Manchester, therefore, is the centre of one of the most densely populated sections of England, and to take care of the food requirements of this great population enormous quantities of foods must be imported. It may be added that Manchester is only 40 miles from Bradford, the pivot of the

wool spinning industry and is, therefore, a rival of London in the wool import trade. There is accommodation available for displaying 50,000 bales of wool under one roof, in rows accessible to buyers. Manchester, as is well known, is the headquarters of the English Co-operative Wholesale Society, Limited. As this society buys large quantities of Canadian produce, it is clear that Manchester is a very important trading centre and one of growing significance from the Canadian standpoint.

The Port of Bristol proved to be one of the most interesting visited. It also affords great possibilities for the expansion of Canadian trade. It is important to bear in mind, in surveying the position of a British port with reference to Canadian exports, that proximity to population is a fundamental feature. Bristol has splendid dock facilities for handling Canadian trade, as it can accommodate Atlantic liners and also cattle ships. It serves a distributive area having a radius of 75 miles, and thus comes into close commercial contact with the West of England. As the crow flies, Birmingham is only 75 miles from Bristol; and in this territory there reside nearly 6,000,000 people. In addition, within a radius of 100 miles from Bristol, there is a population of over 10,000,000; and in this district many important industrial enterprises are located, including the great iron, steel and other industries of the Midlands.

Bristol gave evidence of having wonderful natural advantages for the Atlantic trade with Canada and other countries; and these advantages, coupled with magnificent docks, modern loading and discharging facilities, as well as other equipment, have attracted regular steamship services between the port and other countries. This overseas trade is making a steady headway, giving Bristol a leading place among the great ports of the United Kingdom. It is well adapted, as careful personal examination disclosed, for the landing of Canadian cattle, their slaughter, and distribution inland. In a survey made of the surrounding territory, both rural and urban, it seemed reasonable to conclude that Bristol, with the growth of the Canadian cattle trade, should be able to find a market in its territory both for fat cattle slaughtered on the spot, and for feeders distributed throughout the countryside. At the Avonmouth Dock were found cattle lairs with accommodation for 1,500 head, licensed by the Ministry of Agriculture for receiving Canadian store cattle. The lairs are equipped with slaughter houses, chill-rooms and a saleroom. There are good rail connections with all the surrounding territory. The cold storage facilities consist of 500,000 cubic ft. at the Royal Edward Dock and 226,000 cubic ft. at the Avonmouth Dock. Produce is lifted by cranes from the cold storage rooms of ships direct to the cold storage sorting floors, and from there passed into the various storage chambers.

Cardiff is one of the few ports in Great Britain at which Canadian live cattle may be imported, being licensed for that purpose by the Ministry of Agriculture. At this centre, also, was found exceptional equipment to take care of the interests of the cattle trade. Indeed, the advantages offered at Cardiff for the Canadian cattle trade are unsurpassed. During the past few years many consignments of live Canadian

cattle have been landed, sold and distributed by rail, with advantage to all parts of the surrounding country. The following are important factors which should, in the future, build up a profitable Canadian cattle trade through Cardiff:

1. The landing of the cattle takes place from the ship at a convenient point in the Roath Dock, near the entrance lock, thus insuring rapid dispatch.
2. Cardiff, being the centre of the coal producing district, as well as a great industrial city, gives an opportunity for providing an outward general cargo.
3. Cardiff is the nearest British port to Canada having the essential equipment for dealing with livestock traffic destined for the English and Welsh markets.
4. The cattle are landed at a special berth, immediately adjoining the lairs.
5. These lairs are capable of accommodating 900 store or 500 fat cattle, in addition to sheep and swine.
6. There are modern facilities for watering and feeding the cattle; and Government inspectors to examine the cattle are available.
7. Large abattoirs are situated in a convenient position close to the lairs.
8. There are large chill-rooms connected with the abattoirs by means of overhead runways, providing for quick transportation of carcasses between these plants. An extension of the runways to the loading platform gives a similar advantage when the carcasses are dispatched by train.
9. The cattle can be loaded directly from the lairs into hygienic, vacuum-brake-fitted rail vehicles.
10. An auction ring is provided for the use of salesmen and buyers, thus making it possible for the cattle to be landed, sold and delivered to the purchaser, within a few hours. A dial weighing-machine is installed at the entrance to the auction ring.

It is important to note that the traffic in South Wales to the Midlands of England is controlled by the Great Western Railway and, therefore, little or no shunting is required. Rapid distribution is possible to any part of this thickly populated area, and constitutes in itself a sufficient reason to recognise in Cardiff an important cattle port for future Canadian trade. It should be added that the cold storage facilities are of the most modern type. There are 53,108 square ft. of floor space to receive food products direct from the steamers. It was noticed, while inspecting the facilities of this port, that great quantities of Canadian food products are carried to it by the Canadian Government Merchant Marine. There is a fortnightly service of steamers from Montreal and Quebec in the summer, and from St. John and Halifax in the winter.

The Port of Glasgow from very early days has carried on an extensive trade in cattle and overseas food products. The earliest public slaughter house in Glasgow was erected in 1744 on the north

side of the River Clyde. At the present time, the Glasgow Cattle market and slaughter houses may be termed the Islington and Smithfield of Scotland. The port, wonderful docks, cattle markets and slaughter houses, combined with proximity to a territory that can readily absorb large numbers of Canadian cattle, make Glasgow an ideal point for their distribution. Specifications of the kind of animal required at Glasgow are dealt with elsewhere in this report; but, in passing, it may be mentioned that the Scottish farmer is an expert feeder and quickly recognises the qualities required in a steer for his purposes. The following table shows the number of livestock handled on the cattle market, in the slaughter houses, meat market and chilled room for the year 1926:

CATTLE MARKET.

1926	Cattle 48,328	Calves 5,288	Sheep & Lambs 314,821	Goats 50	Swine 6,969	Horses 14,212
------	------------------	-----------------	--------------------------	-------------	----------------	------------------

MEAT MARKET.

Carcasses Exposed for Sale.

1926	Cattle 66,719	Sheep & Lambs 262,490	Pigs 11,385	Calves 43,255
------	------------------	--------------------------	----------------	------------------

Chilled and Frozen.

1926	Cattle 53,316	Sheep & Lambs 47,912	Pigs 1,923	Calves 157
------	------------------	-------------------------	---------------	---------------

Animals Slaughtered.

1926	Oxen 72,633	Calves 7,526	Sheep & Lambs 319,056	Pigs 26,029	Goats 33	Horses ---
------	----------------	-----------------	--------------------------	----------------	-------------	---------------

Chill-room.

1926	Sides of Beef 26,872	Sheep & Lambs 4,959	Calves 388	Pigs 4,027
------	-------------------------	------------------------	---------------	---------------

RATES AND TOLLS FOR THE GLASGOW CATTLE MARKET.

Charge made by the Corporation

For oxen, cows, bulls or heifers, per head	9d.
For sheep and lambs, per head	1d.
For calves, per head	2d.
For swine and goats	3d

The limits of space will not permit of a complete examination of the conditions of the Canadian cattle trade at British ports in recent years, but the situation which developed at Birkenhead and Manchester may be analysed briefly as, in a general way, typical of the whole. It became clear during 1926 that the Canadian cattle trade was in serious difficulties. By December, 1926, average prices secured at Birkenhead were from 8d. to 8½d. per pound, sinking the offal. During December, 328 store and 183 fat cattle arrived at Manchester. Out of the total store cattle arriving, 108 were licensed to premises for further feeding, and the remainder sold to slaughter houses. Prices

averaged from 46/- to 48/- per 112 pounds live weight. The importations of Canadian cattle to Birkenhead and Manchester during 1924, 1925 and 1926, respectively, were as follows:

BIRKENHEAD.

	Fat	Store	Total
1924	27,695	22,406	50,101
1925	17,339	24,890	42,229
1926	7,028	31,452	38,480

MANCHESTER.

	Fat	Store	Total
1924	2,772	7,835	1,067
1925	9,786	12,527	22,313
1926	5,734	5,338	11,072

The above figures show a reduction of the total imports to Birkenhead of over 3,700 head as compared with 1925, and the much more serious decrease of over 11,600 head as compared with 1924. The figures for Manchester were even more discouraging, since only half the number of Canadian cattle arrived at that port in 1926 as compared with 1925. It has already been made clear that the falling away in the demand for Canadian cattle during 1926, and the decrease in the prices secured for them, was due to the industrial situation which seriously affected the demand for fresh meat, and to the imports of chilled beef from the Argentine. Dealers at the various market centres, when interviewed on this point, stated that the quality of the Argentine beef was so good that sales of fresh killed beef, whether Irish, Canadian or British, were curtailed and rendered very difficult. Importations from South America continued to be heavy during 1927, and this, combined with high costs of transportation to Great Britain, and the rise of prices for beef cattle in the American markets, made it impossible to continue the cattle trade with Great Britain.

There was also a large decline in the imports of both Canadian and Irish cattle at Glasgow in 1926 as compared with 1925. Imports from Canada were 27,578 head as compared with 40,530 head in the previous year. Imports of Irish cattle from Ulster and the Free State declined from 160,772 in 1925 to 137,680 in 1926. In the case of imports from the Free State, the decline was due in part to the order of the Government, already mentioned, forbidding breeding with scrub bulls. Breeding with stock bulls only, has for the time being undoubtedly reduced the number of Irish cattle available for export. As compared with the domestic situation in Ireland and Great Britain, the Canadian cattle trade held up remarkably well in 1926. Canadian feeders yielded small profits to Scottish and English farmers in 1926, but feeding of almost any type did not prove remunerative.

CANADIAN CATTLE IN SCOTLAND.

Major G. B. Johnson, Canadian Trade Commissioner, at Glasgow, made excellent arrangements whereby information could be secured concerning the market demand for Canadian cattle in Scotland. Data

on the cattle trade were secured from the port authorities, from representatives of the great shipping companies, and from many farmers in the neighbourhood of Glasgow, Edinburgh and Aberdeen. During 1926 beef cattle realised from 48/- to 56/- per live cwt. (112 pounds); best medium and young stockers sold up to 54/-; average types from 45/- to 50/-; and inferior animals from 40/- to 44/-, all per live cwt. In May, June and July, the demand for Canadian cattle in Scotland was good; but during the latter months of the year, owing to the prolonged strikes resulting in a lower spending power for the masses, cattle prices suffered a steady reduction, involving shippers of Canadian cattle in heavy losses. Usually during the late autumn months there is a good demand in Scotland for young stockers for winter fattening, but the low level of beef prices discouraged the farmers, and held down the market value of live animals. Owing to the continued losses incurred by Canadian shippers, cattle imports gradually fell away.

From discussion with the various interests mentioned above, and from information received from Major G. B. Johnson, it is possible to state definitely the types of Canadian cattle that can be most profitably shipped to Scotland and England. As was pointed out on many occasions when the problem was discussed with leaders in the cattle industry, the beef market largely governs the store market; and the type of store animal is dictated by what the butcher requires. Scottish and English feeders must produce the type of animal which the butcher wants most, if the latter is to secure the best market price. As Major Johnson pointed out, in this respect the whole market position is changing. Lower wages and reduced spending power, together with the change in public taste, have caused a demand for light weight beef cuts instead of heavy joints. As a consequence, the retail butcher trade demands small young animals. The day of heavy beef cattle in Great Britain is almost over. In most beef markets in Scotland, there are three or four buyers for the light class animal weighing from 10 to 11 cwts. for every one buyer for the heavy type of 12 to 14 cwt. live weight. A choice quality light beef steer will realise 4/- to 6/- per live cwt. more than a heavy steer of the same quality. This difference in values is even more pronounced in summer, when there is a reduced demand for meat. Scottish feeders, therefore, desire to finish choice light and medium weight beef cattle, and have largely lost interest in heavy store animals, three years old and upwards. The type of beef animal that brings the best prices in the Scottish markets is the choice Polled Angus or Shorthorn steer, or a first cross of these breeds, of not more than two and a half years old and weighing from 10 to 11 cwt. live weight. As Major Johnson has stated, the type of store animal that is most wanted is of a similar description, namely, a well-bred young steer weighing from 8½ cwts. to 9½ cwts., at two years old and under, and capable of being made into prime beef with two or three months' fattening. The Scottish markets can absorb large numbers of this type of animal, during the spring buying period from the end of March to June, and during the autumn buying period from September to December, for the winter feeding season. There is also a considerable

market for a young class of cattle between a year and a year and a half old, especially in the spring months. These cattle are put out to graze during the summer, and are fattened into beef with two months' feeding during the late autumn. These cattle should be of the breeds stated above, weighing about 7 cwt. to 8 cwt., live weight. At present this type of animal is provided almost entirely by Scottish and Irish breeders, but Canadian cattle of this class, with a revival of the trade, would be welcomed by cattle feeders in Scotland.

From discussion of the questions involved with the trade, and from information furnished by Major Johnson, it appears that the types of Canadian cattle going forward to Glasgow and other British ports may be criticised from the following points of view:

1. Many animals are too heavy and too old, and, therefore, do not meet the requirements of the general butcher trade which, as explained above, now desires light and medium weight cattle.
2. Scottish feeders must produce a light and medium weight beef steer also, and, therefore, they are not in the market for Canadian stockers of undesired weight or age.
3. A good deal of criticism was directed against Canadian branded cattle, it being charged that branded hides reduce the value of a steer by at least £1 per head.
4. Young horned cattle are suitable for grass feeding, but polled or dehorned cattle are much preferred for winter feeding, as such cattle are fed loose and are seldom tied up in stalls.
5. Polled Angus or Shorthorn cattle, or crosses of these breeds, are more popular in Scotland than the Hereford or Hereford-cross cattle.

The conclusion was reached that Canadian cattle are well liked by the majority of cattle feeders in Scotland. Scottish farmers considered that their outstanding qualities were to be found in their general thriftiness and sound health, coupled with the fact that they are quick feeders and can be turned into prime beef in a short time. In the opinion of men connected with the trade at Glasgow, who were interviewed on the question, there should be a growing market for large numbers of Canadian cattle in Scotland, and the same opinion was expressed with respect to England by men engaged in the trade at Birkenhead, Bristol, Cardiff and other points visited. As Mr. W. A. Wilson, Agricultural Products Representative, at London, and other Canadian Government representatives in Great Britain point out, the most vital factor for future success in the British cattle market is the shipment from Canada of the proper type of animal. It is essential to understand that in the British market the finest quality products of the world compete for supremacy, and that that market is highly organised. Scottish and English feeders are compelled, if they are successfully to meet the chilled beef competition of the Argentine, to finish an animal which measures up to the highest standards of the wholesale and retail meat trade. As Major Johnson has stated, there are many cattle feeders in Scotland who do not purchase Canadian animals because they are too old or too heavy; but many of the same

feeders have stated that they would purchase Canadian cattle by preference if they could secure young, well-bred animals of the proper type. Therefore, plans should be prepared to meet the requirements of the British market along the above lines, to the end that when prices and shipping costs are again brought into line Canadian farmers may find themselves in a position to enter that important market under favourable conditions. As mentioned above also, Canadian shippers must pay strict attention to the periodic requirements of the Scottish market, and concentrate shipments to that market at the seasons of the year when the largest number of animals can be absorbed. It has already been stated that the chief demand occurs from the end of March to the beginning of June, when Scottish feeders are securing supplies of store cattle for grass feeding. During that period, the demand is for young growing cattle from one and a half to two years old. From September to December they are in the market for large numbers of fleshy cattle about two years old, weighing from 8½ to 10 cwt. live weight, for winter feeding. There may be some fluctuations in these periods, according to the state of the weather; and, in a year when winter feed is plentiful, there may be a second winter buying period in January and February to replace animals which have been finished and marketed.

Under ordinary conditions, there is no such clear-cut division of the year in the demand for beef cattle. As a rule, British supplies of beef cattle are sufficient to meet requirements from August to the end of November, and again from February to the end of May. Imports of Irish beef cattle are usually heaviest also from August to November. Therefore, the best periods for the absorption of Canadian beef cattle are in December and January, and again from May to the beginning of August. These facts should be borne in mind when planning a revival of the Canadian cattle trade with Great Britain.

In this connection, Canadian farmers should bear in mind that Irish producers have suffered very severely because of the disturbed condition of the British market; and Irish farmers have not available, as have Canadian producers, a great alternative market near at hand to deaden the shock of readjustment. The Canadian Trade Commissioner at Glasgow reports a serious decline in the export of Irish fat cattle and stores to Scotland. During 1926, the number of Irish fat cattle sold weekly on the Glasgow market was considerably less than the numbers marketed three or four years ago. As mentioned above, the strict regulation of breeding in the Irish cattle industry accounts in some measure for this decline of exports, but the really serious factor has been the falling off in the buying power of British consumers, and the competition of supplies of chilled beef.

Too great attention cannot be given to the future possibilities of the Scottish markets as an outlet for Canadian cattle. Along with a careful study of the situation at Glasgow, an examination of conditions at Aberdeen and its surrounding territory was undertaken. Aberdeen is one of the best shires in Scotland for cattle fattening. Moreover, no other part of Great Britain gave greater assistance to Canada in secur-

ing the removal of the embargo against store cattle. It was found that the general considerations mentioned above, apply also to the Aberdeenshire demand for Canadian small young animals. Again it was insisted that store cattle should not be over two years old—that eighteen months' old animals would be preferred. In this connection, it may be pointed out that the better prices received for Canadian cattle of the right ages, quality and weight offset the relatively heavy charge that accrues under the flat ocean rate.

Aberdeen was an important centre for the Canadian cattle trade in the years 1887-1892. With the imposition of the embargo this important trade was destroyed, but with its removal it was expected that it would again grow rapidly. The Aberdeen City authorities, therefore, began to make plans for providing proper landing, slaughtering and lairage facilities. It was found, however, that to provide the suggested new accommodation for 1,228 head of cattle a total expenditure of £25,450 would have to be undertaken. Unfortunately, and it must be admitted with some reason, the Aberdeen authorities have been apprehensive that the Canadian trade might dwindle, or cease altogether, especially following upon action by the United States in reducing or abolishing the tariff on Canadian cattle. As a result, the cattle that were inspected at Aberdeen carried such heavy costs in relation to their selling values that they proved unprofitable. Such cattle must be forwarded by rail from Glasgow until Aberdeen can conclude that the Canadian trade is established on a permanent basis.

CHAPTER XVIII.

PROBLEMS OF TRANSPORTATION.

TRANSPORTATION COSTS AND MARKET RETURNS.

Notwithstanding the prevailing difficult situation with respect to market prices in Great Britain, it might still be profitable to forward cattle to that market were it not for the high costs of transportation. It is impossible to analyse the many important and difficult questions that arise in connection with shipping cattle overseas, but the chief facts may be briefly examined. There are two separate problems of fundamental importance here, the one relating to freight rates over Canadian lines and the other to shipping costs on the Atlantic. Although the reduction in the flat rate from \$20.00 to \$15.00 per head was received with acclaim by the trade and primary producers, nevertheless, the costs still remain at a high level. High freight rates are not an important factor when prices rule high, but they become decisive when products are forwarded to a falling market. Without going into the general rate structure, the problem as it confronts producers on the prairies may be made sufficiently clear by examining the following data bearing upon the approximate expense of shipping cattle from four selected points, namely, Calgary, Saskatoon, and Moose Jaw, and Winnipeg:

APPROXIMATE EXPENSES OF SHIPPING ONE ANIMAL BY MONTREAL FOR EXPORT—WEIGHT 1,170 LBS. OFF CARS MONTREAL.

	From Calgary	From Saskatoon	From Winnipeg
Railroad freight, per 100 lbs.	@ \$1 14½ \$13 39	@ \$1 12½ \$13 16	@ \$ 85 \$ 9 95
Stock yards en route to Montreal	2 00	1 50	85
Stock yards at Montreal, 1½ days	.75	.75	.75
Expenses at Montreal:			
Ropes, pals, etc., wharfage, handling, tagging	1 25	1 25	1 25
Expenses on Steamer:			
Including insurance	5 75	5 75	5 75
	<hr/>	<hr/>	<hr/>
Ocean Freight	\$23 14	\$22 41	\$18 55
Selling Expenses:			
In Great Britain, £1 0 0 to £1 10 0, say, £1 5 0, @ \$4 84	15 00	15 00	15 00
	<hr/>	<hr/>	<hr/>
	6 05	6 05	6 05
	<hr/>	<hr/>	<hr/>
	\$44 19	\$43 46	\$39 60

These figures indicate how serious is the shipping cost as compared with the rates on Irish cattle. The only possible way that the Canadian farmer can carry such heavy charges is through receiving a remunerative price on the British market. As compared with the Irish producer, the Canadian prairie farmer is in an exceptional position as regards production costs, owing to cheaper land, more extensive grazing areas, abundance of feed at low production costs, and a lower

level of taxation. Also, the prairie farmer promotes his enterprise on a much larger scale than his Irish competitor, from the standpoint of total investment and equipment. This permits him to make use of machine production on a more economical basis. Data on these points have already been presented, and require no further emphasis here.

In examining the above figures it will be observed that the ocean charges, including the flat rate of \$15.00 per head plus expenses on the boat amount to approximately \$20.75, and that the actual railway rate amounts to a much smaller part of the total. Absolutely, it is a heavy burden to the shipper, but relatively to the long distance which the cattle are carried, the costs of providing necessary equipment, etc., the rate, as compared with European and United States rates, is fairly reasonable.

With respect to the ocean rate, the reduction in 1927 from \$20.00 to \$15.00 per head, has been of little value to the Canadian farmer and has proved most disappointing to shipping companies inasmuch as it has failed, unfortunately, to encourage the carrying trade. The Canadian livestock industry could support all the cattle carrying steamers now operating on the North Atlantic, and could load them to capacity, provided the right economic conditions for the live cattle industry existed. Unfortunately, these conditions did not obtain in 1926, because Canadian exporters could do business only at a loss. As a result the volume of business necessary to load cattle ships to capacity was not available, and shipping companies' returns were thereby seriously impaired. When cattle rates on the Atlantic are examined, Canadian producers should bear in mind that even that relatively high \$15.00 rate can be assured only if the carriers can be guaranteed a sufficient volume of business to justify it.

The price war in chilled Argentine meat, between the British and United States packers, which continued during 1925 and 1926, seriously affected the price for live cattle from Ireland and Canada. Also, as has been noted, the industrial upheaval of 1926 impaired the buying power of the British market, and reduced fresh meat values. With the lower prices on fresh meat, the demand for store and butcher cattle was curtailed; and exporters in Canada were driven elsewhere to look for a market, or to cease operating. During this difficult period, 1924-1926, the ocean carriers maintained the fixed rate of \$20.00 per head, making it inevitable that, taking British market prices into consideration, the Canadian export cattle trade should decline. Had it been possible for the shipping companies to reduce the rate to \$15.00 per head in 1926, it is probable that there would have been a greater volume of business and larger earnings for farmers and the carriers as well. If the carriers maintain the \$15.00 rate, with the restoration of prices in Great Britain, Canadian shippers may be able in the future to provide a sufficient volume to fill the ships and place the carrying trade on a paying basis. Undoubtedly, in 1926 the ocean rate of \$20.00 per head on live cattle from Canada operated as an almost prohibitive tariff, as is seen in the decline of shipments from 110,868 in 1925 to 76,654 in 1926. There had been a steady increase in the exports of

Canadian cattle to the United Kingdom since the embargo was lifted in April 1923, as has been indicated in figures already presented. The serious decline of exports in 1926 was due, not to lack of capacity on the part of the Canadian livestock industry, but to the heavy freight charges relative to British market values. Without doubt, the livestock industry will expand greatly if encouraged by reasonable returns in the export field, either in the United Kingdom or in the United States.

It is difficult to say whether Canadian exporters would have been encouraged to ship cattle in volume to the British market, at the existing land and water rates, even if the beef war and the heavy importations of chilled beef had not suddenly demoralised market values. It is probable that the shipping companies would have hesitated to reduce the rate if prices had remained on the level of 1925, because the carriers have a huge overhead to meet on their investments in the vessels and special equipment. It is only fair to state that the carriers have been placed in an almost impossible position, because they cannot provide for immediate retrenchment as can be done, in part at least, in the cattle industry. The carriers, therefore, hoping to make the best possible financial showing, maintained the old ocean rate as long as possible, and thus themselves played a part in depressing the Canadian export cattle trade.

As has been pointed out by Mr. W. A. Wilson, Canadian Agricultural Products Representative, fresh meat is what the British consuming public in the past has demanded, especially for the better class trade. It has always been, in recent years, in short supply. Whether the demand for fresh meat has been permanently affected by the heavy volume of sales of chilled meat from the Argentine, and frozen meats from New Zealand and Australia, it is difficult to decide. Assuredly, its volume of sale in the future will depend upon the relative prices and supplies of chilled and frozen meats. Records of the Smithfield Market show that only sixteen per cent. of its business is in fresh meat, and that the supply is almost continually short of the demand. The lower ocean rate of \$15.00 per head may help in restoring Canadian trade in live cattle with Great Britain, but that can be accomplished only if the carriers are given a sufficient tonnage to cover overhead and operating costs, and to provide a reasonable return on their investments. In a general way, greater tonnage at reduced rates is a sound economic principle to apply to transportation, as against a limited tonnage at high rates, particularly if the high rates gradually diminish the volume of business. The volume of turnover is essential from the standpoint both of Canadian exporters as well as of ocean carriers. This tonnage can be developed in Canada provided that transportation costs are kept in line with selling prices in the British market in such a way as to yield a reasonable return also to the livestock industry.

The shipping companies naturally study the relative incomes that can be secured from carrying cattle and other classes of freight which may be offered. It has been pointed out that under-deck

cubic ft. of space is occupied by each animal. This is equivalent to 7 1/24 tons at 48 cubic ft. per ton, which is a fair average of storage per ton of the cargoes carried. It is maintained, also, that the rate at \$20.00 per head only equals £4-2-8, which makes the space occupied by each animal equal to 11/9 per ton. This return is much less than the current returns on the space which could be occupied by other cargo. At the same time it should be pointed out that this argument is valid only if other paying cargo can be secured in volume; otherwise it would be more profitable to the shipping companies to keep the rate at \$15.00 per head and thereby secure heavier traffic. Also, on the high seas as well as on the railways, the principle of charging what the traffic can bear must have some consideration, although doubtless it is not the only factor to be taken into account. It is better to carry Canadian cattle in volume, provided that direct costs and overhead expenses are met, than to rely upon traffic that pays a higher rate but which may not be available in sufficient volume to meet the above costs. The shipping companies state, that from a business point of view, there is no real reason for carrying cattle at a less rate than other commodities. In discussing this problem with men active in the shipping trade, attention was drawn to the fact that a duty rests upon Canadian breeders and exporters as well as upon British ship owners in bringing the Canadian trade back to a paying basis. It was said that Canadian producers and breeders have not sufficiently studied market conditions in Great Britain; that many rough cattle have been shipped which necessarily bring much lower prices than the home produced or Irish animals. Also, the charge was made that Canada ships too heavy a class of animal, and one that is too old, and that, therefore, profitable market returns have not been realised. It was suggested that Canadian breeders should purchase some of the high class bulls at the British sales, and grade up the quality of their cattle. Under these conditions it was said that Canadian cattle might bring £5 extra, or even more, when sold to the butcher trade. Attention was also drawn to the fact that Canadian cattle during 1925 and 1926 were competing not only with Irish and British bred cattle, but with chilled beef from the Argentine. Argentine producers have been paying in recent years from 1,000 to 2,000 guineas for bulls at British sales, and Ireland has also been buying animals at high figures. In other words, the Argentine and Irish producers are actively concerned with grading up their stock, and British ship owners insist that Canadian producers and breeders must do the same if they are to secure the best prices in the British market. The question of granting a subsidy by the Canadian Government, of say, \$5.00 per head was also raised, it being stated that an expenditure of \$250,000.00 on an export of 50,000 cattle would not prove a serious burden to Canada. On the other hand, it was argued that some such subsidy would be of material advantage in aiding Canadian producers to recover their share of the British trade. There are many serious objections, however, to granting a subsidy on the export trade to Great Britain, and it is doubtful whether a subsidy covering the sum mentioned would divert exports from the markets of the United States to Great Britain. Some objection was also taken to

branding Canadian animals, for reasons already mentioned. As against all the alleged defects of the class of animal that has been exported to Great Britain, it was admitted that the Canadian cattle are wonderful thrivers, and are much healthier than the animals reared either in Ireland or Great Britain.

It may be granted that Canadian cattle have not always measured up to the required standards of the British markets, but nevertheless, under normal conditions they have been in good demand by Scottish and English feeders. It is also granted that improvements may be made in breeding and grading animals for export, but such improvements can be effected only over a period of years, and have little immediate bearing upon ocean rates. With respect to the reduction from \$20.00 to \$15.00 per head, it may be said, as already explained, that low paying freight in volume is on the whole more desirable than smaller lots of cargo carried at higher rates. Moreover, a choice of cargo is not always at the discretion of the carriers. It should be borne in mind that grain is carried at relatively low rates by companies operating regular lines of steamers, or otherwise tramp steamers would secure the business. In other words, the line steamship companies prefer to carry grain at relatively low rates than to carry cargo only that brings a higher rate per cubic foot, because if the latter traffic fails to come forward in volume these ships must proceed in ballast. As has been pointed out by Mr. W. A. Wilson and others, in dealing with this problem with the shipping companies, if the cattle rate is to be determined on the basis of higher rates ruling for other commodities, this can mean only the ultimate disappearance of the Canadian cattle trade. The collapse of the export cattle trade to Great Britain has proved to be of serious consequence to the British shipping companies which had at great expense equipped their vessels for the conveyance of cattle. It seems evident, therefore, that the cattle business can expand again only when transportation rates and market prices in Great Britain are brought into line with costs of production on Canadian farms. This does not overlook the fact that relatively higher rates in the United States will draw off the Canadian surplus to that country.

It should be added that the \$20.00 rate, as is well known, operated to induce shipments of heavy bullocks. The explanation lay in the fact that the flat rate per head offered no inducement to shippers to load the smaller animals. True, there was a reduction of \$2.00 per head where five animals could be put in the space of four. This, however, was not a sufficient inducement because the weight per bullock had to be so light to comply with the conditions that the cost per pound exceeded any saving that could be effected in the rate per head, or any increased price that could be secured for the lighter animal in the British market. This loss was also the heavier when smaller bullocks were forwarded that were just too large to be shipped in groups of five, and as a consequence were charged the flat rate. Canadian exporters understood quite well what British buyers required, but with them the first problem was that of securing at least the costs and some profit on their trading transactions. Experience seemed to show that the

heavier bullocks were the only ones that could be exported at the \$20.00 flat rate and leave any chance of making a profit. In 1926 there was no such opportunity even with the heavy animals, and the business declined. While better prices undoubtedly could be secured for the lighter, younger animals, it is debatable whether such prices could compensate for the extra carrying costs per pound under the old per head rate.

With regard to improving the quality of Canadian cattle destined for the British market, it may be observed that in a large country like Canada there is bound to be considerable individual choice among producers. It is not an easy matter to bring about quick improvements even in an old, well-established livestock industry such as obtains in Ireland, as is evidenced by the present programme of the Free State Government. Owing to the outbreak from time to time of foot-and-mouth disease in Great Britain, there was little or no incentive to import British pedigree stock into Canada. While steps are being taken to improve this trade in purebred animals, it must not be overlooked that Canada has many splendid herds from which purebred sires can be secured. With respect to the exceptional prices paid by Argentine cattle men for British pedigree stock, it should be borne in mind that the Plate River ranchers carry on business in huge volume, and can, therefore, pay the prices quoted. Nevertheless, as is made clear by displays of Canadian purebred livestock at the National Exhibition and the Royal Agricultural Show at Toronto as well as elsewhere, Canadian farmers are able to meet their requirements for pedigree sires in a fairly satisfactory way from domestic herds. As has been pointed out by Mr. W. A. Wilson, Canadian representative of the Department of Agriculture at London, those who have visited the Royal Agricultural Show in England and the Canadian National Exhibition at Toronto have been astonished at the wealth of quality and blood in Canada's pedigree stock. Mr. Wilson is further of the opinion that if Canada could get the freedom of sale and distribution of its cattle in the British market on terms similar to those enjoyed by dealers in Irish bullocks, there might then be good ground for asking for Canadian official grading and classification of bullocks to prevent inferior types being exported to Great Britain. With respect to the skin brand on Western cattle, while it has undoubtedly depreciated the price of these bullocks in the British auction ring, it must nevertheless be continued in the open areas in the West for a considerable time. Where cattle have the opportunity of mixing some means of identification is necessary, and the brand must be used for that purpose. It is a liability that some of our Western cattle must continue to carry, no matter where they are marketed.

FREIGHT RATES IN RELATION TO LIVESTOCK TRANSPORTATION.

Figures have already been presented showing the nature of freight costs by land and water on Canadian cattle exports. It has also been said that the freight rate to Montreal and other export points is reasonable, in the sense that it compares favourably with rates for similar services in the United States and Europe. Attention has also

been drawn to the fact that freight rates cannot be considered equitable or reasonable in themselves, but that they must necessarily bear some relation to the industries that are dependent for success upon them. Under the exceptional prices that obtained during the War for grains and livestock, freight rates, even although carried to higher levels, were not as burdensome to Canadian producers as the lower rates that followed the decline in prices of farm products. The condition of the livestock industry, with respect to profits, and the position of the railways also with respect to costs and profits, cannot be considered as separate problems. It is a truism to say that the railways can succeed only as the basic industries of the country prosper, and, conversely, agriculture and other important Canadian enterprises cannot flourish if the railways upon which farmers and other producers must depend to carry their products to market are not securing a sufficient return to provide efficient service. Indeed, it may be said that the railways are an indispensable economic instrument in enabling Canadian farmers to compete on equal terms with competitors in world markets.

Mr. F. H. Auld, Deputy Minister of Agriculture for Saskatchewan, made a careful and comprehensive survey of the railway rates for the 1925 meeting of the Western Canada Livestock Union. Mr. Auld took care to show that the question as to whether freight rates for livestock are equitable or not must be considered from several points of view, and more particularly with reference to the relations of buying power of livestock over the general range of other commodities. The following table was prepared to indicate the average prices of select bacon hogs from 1913-1925 at the Winnipeg market, and the proportion of the returns required to pay freight charges:

THE AVERAGE PRICE OF SELECT BACON HOGS, WINNIPEG MARKET,
FREIGHT CHARGES PER 100 POUNDS, SASKATOON-WINNIPEG, AND
THE PROPORTION OF THE RETURNS REQUIRED TO PAY FREIGHT
CHARGES.

	Winnipeg prices per 100 lbs.	Freight, Saskatoon to Winnipeg	Proportion of price for freight
1913	\$ 8.66	29½c.	3.4%
1914		29½	3.8%
"	7.82	July 1 32½	4.2%
"		Sept. 1 32	4.1%
1915	8.30	32	3.9%
1916	10.35	32	3.1%
1917	15.20	32	2.1%
1918	18.85	Mar. 15 37	2.0%
"		Aug. 12 39	2.1%
1919	18.81	39	2.1%
1920	19.20	39	2.0%
"		Sept. 13 52½	2.7%
1921	12.40	Jan. 1 50½	4.1%
"		Aug. 15 39	3.1%
1922	11.77	39	3.3%
1923	9.98	39	3.9%
1924	8.72	39	4.5%
1925	*12.81	39	3.0%

* Ten months ended October 31.

The above figures indicate that in 1913 the carriers received 3.4 per cent. of the producer's dollar, for carrying select bacon hogs; in 1924, 4.5 per cent., and for 1925, approximately 3 per cent. This

freight rate might be considered equitable were it not for the fact that in the meantime, especially in the post-war period, the movement of general prices turned distinctly against the farming community. The following table, also prepared by Mr. Auld, shows the situation with respect to freight rates on good butcher steers, and prices received at the Winnipeg market:

AVERAGE PRICES AT WINNIPEG FOR GOOD BUTCHER STEERS,
1,000-1,200 POUNDS, ALSO FREIGHT RATES PER 100 POUNDS,
SASKATOON TO WINNIPEG, AND THE PROPORTION OF THE PRICE
PAID FOR FREIGHT.

	Price	Freight, Saskatoon to Winnipeg	Proportion of price for freight
1913.....	\$ 5.86	32½c.	5.5%
1914.....	6.12	32½	5.3%
".....	.....	Sept. 1 32	5.2%
1915.....	6.28	32	5.1%
1916.....	6.54	32	4.9%
1917.....	9.14	32	3.5%
1918.....	9.86	Mar. 15 37	3.7%
".....	.....	Aug. 12 39	4.0%
1919.....	11.77	39	3.3%
1920.....	11.10	39	3.5%
".....	.....	Sept. 13 52½	4.7%
1921.....	6.22	Jan. 1 50½	8.1%
".....	.....	Aug. 15 39	6.3%
1922.....	5.59	39	7.0%
1923.....	5.54	39	7.3%
1924.....	5.27	39	7.4%
1925.....	*6.06	39	6.4%

* Ten months ended October 31.

These figures show that freight costs were heaviest in 1921, when the rate was near the peak and prices of cattle had dropped. The freight rate in 1925 was approximately 6.5c per 100 pounds more than in 1913; the percentage of returns paid for freight was higher than in 1913, but less than it had been for some years. The following table shows Montreal prices for prime steers and corresponding freight charges, Winnipeg to Montreal, as also the percentage of sale price which was paid for freight:

MONTREAL PRICES AND FREIGHT CHARGES ON PRIME STEERS,
WINNIPEG TO MONTREAL, DURING CERTAIN YEARS, ALSO THE
PROPORTION OF THE SALE PRICE WHICH WAS PAID FOR
TRANSPORTATION.

	Price	Freight	Proportion of price for freight
1913.....	\$ 7.50	60½c.	8 1%
1914.....	7.80	60½	7.8%
1915.....	7.99	60½	7.6%
1916.....	8.30	60½	7.3%
1917.....	11.35	60½	5.3%
1918.....	12.29	Mar. 15 69½	5.7%
".....	12.39	Aug. 12 79	6.4%
1919.....	14.64	79	5.4%
1920.....	12.89	79	6.1%
".....	13.18	Sept. 13 1.08½	8.2%
1921.....	8.49	Jan. 1 1.05	12.4%
".....	8.29	Aug. 15 85	10.3%
1922.....	7.67	85	11 1%
1923.....	7.30	85	11.6%
1924.....	6.83	85	12.4%
1925.....	*8.21	85	10.4%

* Ten months ended October 31.

It will be seen that this service cost the farmer less in proportion to returns from 1917 to 1920, and most in 1921 and 1924. The cost of freight in relation to selling price was over 50 per cent. greater in 1924 and nearly 30 per cent. greater in 1925 than in 1913, when conditions were on a so-called "normal basis." It will be observed that the rate in 1925, and in effect since August 15, 1921, was 40½ per cent. greater than the 1913 rate.

If now, as Mr. Auld points out, a comparison is drawn between the returns for bacon hogs and cattle and the returns, as indicated in their wholesale prices, for fifty commodities in general use, including fifteen manufactured articles, fifteen raw or semi-manufactured materials and twenty foods, it will be found that there was a wide discrepancy between the purchasing power of swine and cattle in exchange for the fifty commodities with which comparison is made. These discrepancies are indicated in the following tables:

INDEX PRICE, BACON HOGS, BASIS OF AVERAGE PURCHASING POWER INDEX BASED ON INDEX OF WHOLESALE PRICE, 1913 (Dominion Bureau of Statistics)

	Index, wholesale prices	Index price bacon hogs	Purchasing power
1913 ..	100	100	100
1914 ..	101.9	90.3	88.6
1915 ..	109.6	95.8	87.4
1916 ..	136.1	119.5	87.8
1917 ..	177.8	175.5	98.7
1918 ..	202.1	217.7	107.7
1919 ..	207.0	217.2	104.9
1920 ..	235.2	221.7	94.3
1921 ..	161.4	143.2	88.7
1922 ..	149.0	135.9	91.2
1923 ..	153.5	115.2	75.0
1924 ..	151.3	100.7	66.6
1925 ..	159.7	147.9	92.6

	Index, wholesale prices	Index price prime steers	Purchasing power
1913 ..	\$ 6.90	100	100
1914 ..	7.20	101.9	102.4
1915 ..	7.39	109.6	97.7
1916 ..	7.70	136.1	82.0
1917 ..	10.75	177.8	87.6
1918 ..	11.60	202.1	83.2
1919 ..	13.85	207.0	97.0
1920 ..	12.10	235.2	74.6
1921 ..	7.44	161.4	66.8
1922 ..	6.82	149.0	66.3
1923 ..	6.45	153.5	60.9
1924 ..	5.98	151.3	57.3
1925 ..	7.36	159.7	66.8

These figures explain how great were the obstacles which the producer of commercial livestock had to overcome in the post-war period. For example, the producer of bacon hogs in 1920 received more than twice as much for his hogs as he did in 1913, but when he used the proceeds to buy the necessities of life every dollar received from his hogs purchased only as much as 94.3c would buy in 1913. In 1918 and 1919 farmers who produced hogs held the advantage, but the reverse was the case in other years, and by 1924 the loss in purchasing power was exactly one-third as compared with 1913.

Mr. Auld shows that a similar condition existed with respect to prime steers, except that not even in 1920, when prices were double those of 1913, was the revenue from steers equal to their purchasing power in 1913. In 1920, the decreased purchasing power was 25 per cent. under 1913, and this declined annually till by 1924 a steer brought only 57.3 per cent. as compared with 100 per cent. in 1913. This loss in buying power, ranging as high as 40 per cent., was most serious to the producer. Notwithstanding the relatively high prices that prevailed during the War, unless farmers were operating on a fairly large scale, their returns could not place them in a preferred position in relation to other industrial classes. Indeed, the small producers and those who were selling stockers, feeders and canners did not show a profit on their cattle business. The above figures demonstrate fairly conclusively that freight charges, while perhaps not too high from the standpoint of the railways, have undoubtedly been a substantial item in the marketing of livestock, especially under the conditions that obtained from 1920 to 1925.

The same general argument that was used in connection with ocean rates might be applied to railway rates on livestock. In a general way, it would pay the railways to grant "developmental" rates on livestock, if it may be reasonably expected that such assistance to this branch of agriculture will produce traffic in volume in the future. The railway companies have in fact recognised this by granting concessions in the past. In a general way the rate must be related to the returns received by producers over a period of years, if the livestock industry is to be placed on a permanent paying basis. As pointed out by Mr. Auld, reduction in freight rates per one hundred pounds are as a rule not comparable with the returns that may be secured per one hundred pounds for a quality product, either select bacon hogs or prime butcher steers. As a rule, feeders consider a profit of 2c per pound between buying and selling prices enough to ensure profitable feeding. It will be difficult to eliminate entirely low grade, unfinished stock that comes to market as the result of inexperience or, at times, as a consequence of scarcity of feed. Every effort should be made to support the supply of cattle coming forward for the most exacting markets, and this class of stock should be given a transportation rate that will show convincingly that this is the most profitable class of stock for breeders to produce. Mr. Auld argues, therefore, for a further reduction in the cost of moving export steers to Eastern ports to encourage the fattening of beef cattle in Western Canada. This is a question that must receive careful consideration in preparation for a return to the British market, when conditions warrant.

The railways, it must be kept in mind, have contributed largely to the prosperity of the livestock industry in Western Canada, as is indicated in the following concessions which they have made in the past:

1. Half rates on all pedigreed stock. This rate was granted exclusively in Western Canada for many years, and only within the last three years have railways in a few of the states of the United States granted similar concessions.

2. Carrying livestock to provincial fairs and expositions free one way.

3. The Canadian Pacific in the early days presented the farmers with purebred bulls free of charge, and in later years, through livestock trains, have distributed purebred bulls free of freight charges, and also returned scrub bulls to market free of charge.

4. In order to help the livestock industry, freight free distribution has been made of fodder crop seeds through fodder crop cars.

5. Encouragement has been given to the raising of bacon hogs by assistance to boys' and girls' bacon hog clubs in the three prairie provinces, including prizes and free trips for the winning team in each province to the Toronto Royal Winter Fair.

6. Better Livestock Trains have been run for many years, demonstrating the desirability of the use of purebred sires.

7. Half rates on stockers have been given to encourage winter feeding and finishing of cattle.

8. The railways have also given assistance in the movement of both stock and fodder during the drought years, when they absorbed one-third of the charges on hundreds of carloads of fodder and returned livestock free of charge from points where it had been shipped for wintering.

The Canadian Pacific Railway was the first railway in the world to give a half rate on purebred stock. This practice was followed later by the other Canadian railways now included in the Canadian National Railways; but it was only in 1922 that this rate was introduced into the United States, and then only for some sections. It is doubtful whether United States farmers would have secured this concession had it not been that the Canadian railways inaugurated the policy in Canada. In all fairness, it should be added that the railway executives of Canada do recognise the importance of building up the agriculture of the West, and it may be expected that they will give reasonable consideration to export rates on livestock when conditions demand such in the future.

EXPORTS OF CANADIAN CATTLE AND MEATS.

Notwithstanding the disappointing conditions obtaining in the British market, the Canadian livestock industry is expanding and is in a sound condition. The following figures are presented to give the facts bearing upon the exports of cattle and calves, of bacon, hams, pork and beef in the period 1920 to 1926:

EXPORTS OF CATTLE AND CALVES, 1920-1926.

Cattle.

Year	To Great Britain		To United States		Total Exports	
	No.	Value	No.	Value	No.	Value
1920 ...	320	\$ 38,400	236,642	\$22,197,639	240,660	\$22,684,831
1921 ..	33,053	3,888,016	135,257	4,869,456	174,552	9,340,368
1922 ..	18,475	2,096,565	189,760	5,300,795	212,772	7,784,016
1923 ..	57,672	6,058,507	96,873	3,601,243	160,771	10,126,721
1924 ..	79,435	8,402,377	97,847	3,854,730	183,242	12,622,863
1925 ..	110,868	11,796,383	86,748	3,621,959	204,378	15,859,562
1926 ..	79,985	8,176,820	92,962	3,824,154	176,343	12,222,848

Calves.

Year	To Great Britain		To United States		Total Exports	
	No	Value	No.	Value	No	Value
1920	74,428	\$ 1,563,031	74,519	\$ 1,564,330
1921	57,623	540,074	57,695	540,669	
1922	27,720	238,000	27,995	243,220	
1923	24,074	243,251	24,219	244,277	
1924	35,178	447,019	35,359	448,578	
1925	62,313	880,331	62,814	883,883	
1926	65,333	1,068,802	65,625	1,071,622	

EXPORTS OF BACON, HAMS AND PORK, 1920-1926.

Bacon and Hams.

Year	To Great Britain		To United States		Total Exports	
	lbs.	Value	lbs	Value	lbs.	Value
1920	104,185,400	\$33,930,894	664,800	\$ 213,944	105,243,300	\$34,288,497
1921 ..	101,726,000	25,477,490	219,300	75,001	103,123,000	25,613,052
1922 ..	98,384,000	22,629,845	154,600	39,935	99,141,100	22,796,641
1923 ..	99,230,100	18,721,462	282,400	71,559	100,304,800	18,942,005
1924 ..	111,968,800	19,668,455	715,500	175,794	113,395,700	19,991,636
1925 ..	130,503,700	28,466,844	1,277,600	384,129	132,522,900	29,055,490
1926 ..	90,843,600	21,971,153	1,596,800	583,784	93,185,000	22,768,778

Pork.

Year	To Great Britain		To United States		Total Exports	
	lbs	Value	lbs.	Value	lbs.	Value
1920	598,700	\$ 164,651	1,387,800	\$ 406,384	4,121,000	\$ 1,025,765
1921	164,600	27,690	594,000	164,160	2,970,000	510,902
1922	395,700	67,447	609,000	142,742	1,680,900	283,637
1923	2,072,000	329,037	709,000	183,314	3,342,100	587,840
1924	6,270,300	859,133	5,567,200	954,565	14,754,300	2,519,756
1925	7,909,600	1,439,995	7,014,300	1,376,106	17,286,400	3,139,120
1926	6,536,300	1,445,424	8,233,700	1,904,843	16,798,400	3,651,549

Beef.

Year	To Great Britain		To United States		Total Exports	
	lbs	Value	lbs	Value	lbs.	Value
1920	12,158,000	\$ 1,839,305	38,768,500	\$ 6,426,290	67,028,200	\$10,995,077
1921	5,629,300	718,796	25,308,300	3,140,719	32,143,200	4,030,721
1922	6,231,900	477,771	18,583,600	2,218,321	26,340,900	2,869,445
1923	6,232,400	422,293	13,087,300	1,696,559	22,772,000	2,485,882
1924	6,364,600	436,429	9,808,200	1,065,327	23,206,800	2,088,455
1925	10,423,400	802,462	10,105,200	1,190,042	34,627,700	3,056,970
1926	3,517,100	290,222	16,242,000	1,964,401	27,233,800	2,915,678

A study of the above data will disclose how seriously the decline of the exports of cattle to the United States, during the period in question, affected the Canadian producer. Exports of cattle to the United States amounted to 236,642, in 1920, and had a total value of \$22,197,659. By 1926, exports had fallen to 92,962 head, having a value of \$3,824,154. While the British market was a stabilising factor of very great importance during these years, nevertheless, the total value of cattle exported in 1926 was approximately \$10,000,000 less than in 1920. There was no such serious falling off in the value of calves exported to the Republic, this amounting to \$1,071,622 in 1926 as compared with \$1,564,330 in 1920. Exports of bacon and hams to Great Britain held up remarkably well from 1920 to 1926, and, indeed, in terms of volume considerably increased, although values fell from \$33,930,894 in 1920 to \$21,971,153 in 1926. Comparing the value of total exports of bacon and hams to Great Britain and the United States in 1920 and 1926 respectively, it will be found that there was a serious loss, total values standing at \$34,288,497 in 1920 and \$22,768,778 in 1926. Exports of pork during this period increased from 4,121,000 lbs. to 16,798,400 lbs. although total values did not increase in the same proportion. Nevertheless, a splendid expansion of trade in this commodity took place. The figures in the above table indicate a heavy decline in exports of beef to Great Britain and the United States, total exports falling in value from \$10,995,077 in 1920 to \$2,915,678 in 1926.

The upward tendency of prices for cattle in the United States during 1927 was followed by a similar movement of prices on Canadian markets. The home trade has proved so attractive that exporters have lost interest, for the time being, in the British market. As is well known, the number of cattle in the United States has been declining since 1922, and is now below the pre-war average. The United States Bureau of Agricultural Economics is of the opinion that there will be increased opportunities to dispose of Canadian cattle in the United States at better prices than could be obtained in Great Britain, for the immediate future. This will probably hold good at least for the next twelve months.

In the first six months of 1927, only 8,263 head of cattle were exported to the United Kingdom, as compared with 32,001 head to the United States. In June there were no shipments to British markets. During the same period 129,716 hogs crossed the border to American markets, whereas for the corresponding six months of 1926 only 3,636 hogs were exported to the Republic. In the first half of 1927 United States imports of bacon rose from 587,500 lbs. to 2,151,600 lbs., and of pork from 2,349,700 lbs. to 9,166,600 lbs. Canada, therefore, is in the favourable position of having in the United States a great alternative outlet to the British market for animals and their products.

A buying campaign has been in progress in recent months, extending from Canada to Mexico. Mexico, being apprehensive of depletion of its herds, has placed an export tax on live animals leaving the country, whereas Canada has been in a position to part with feeders and stockers as well as animals of the butcher class. True, in relation to the tremendous buying power of the American market, Canada is not for the time being a very considerable source of supply, but there is room for great expansion, particularly in the West. Some American traders are of the opinion that relatively small numbers of cattle will be secured from Canada during 1928, because of the marketing of the surplus this year. At the stock-cattle sale at Calgary in October, 1927, United States buyers were present from Central and Pacific Coast markets.

The United States tariff is an obstacle in the way of legitimate economic expansion of the Canadian livestock industry, but on a rising market at St. Paul, Chicago and elsewhere, the tariff barrier may be of little consequence. Some leaders in the livestock trade of the United States offer the suggestion that Canadian beef production is approaching a point where it will be required chiefly for the domestic market. Under these conditions, it may be expected that more favourable consideration will be given to the removal of the tariff on Canadian livestock. United States farmers have imported large numbers of Canadian cattle for their feed lots. Thousands of Canadian cattle have been installed for a short feed in northern Illinois, where they are popular owing to their gain-making qualities. American farmers who desire to buy Canadian stockers, and who find it profitable to market their feed through finishing Canadian cattle, may be expected to continue to agitate for the removal of the tariff on Canadian livestock.

At the present time the Canadian grower is securing the Chicago or the St. Paul price, minus the duty and transportation expenses. Western Canada is following the wise policy of conserving its cattle resources. Both heifer and steer calves, that could have been sold to American feeders early in the season at advantageous prices, were subsequently taken off the market. It is reported that Ohio buyers bid prices for these cattle equivalent to Texas quotations, less the duty. There is a tendency, however, in the prairie provinces, to carry the young cattle over, and to finish them for a later market. Under stronger prices, the calf crop of the West will increase; but it is doubtful if, for some years at least, Alberta ranchers will have large numbers of cattle for export. Saskatchewan and Manitoba may be considered to be more definitely in the dairy area, while Eastern Canada is increasing its holdings of sheep. The following figures show average prices of cattle at Chicago for June and July, 1927:

AVERAGE PRICES OF LIVESTOCK AT CHICAGO FOR 1927.

Description	June 6-11	June 13-18	June 20-25	June 27 J'ly 2	July 4-9	July 11-16	July 18-23	July 25-30
Beef Steers (choice and prime):	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
(1) Steers, choice, 1,300-1,500 lbs.	12.94	13.32	13.36	13.34	14.04	14.14	13.94	14.10
(2) Steers, choice 1,100-1,300 lbs.	..	..	..	..	13.43	13.64	13.62	13.75
(3) Steers, choice, 950-1,100 lbs.	11.82	12.30	12.34	12.28	12.63	13.05	13.05	13.28
(4) Steers, light weight, 800 lbs up, medium .....	..	..	..	..	10.29	10.48	10.08	9.92
(5) Heifers, good and choice, 850 lbs. up	9.90	10.34	10.15	10.06	10.91	11.07	11.00	11.00
(6) Veal calves, medium choice, 190 lbs down	11.92	12.45	11.58	11.47	13.31	13.65	12.95	13.38

In the meantime cattle prices in the British Isles cannot be said to be altogether hopeless. The following statement shows prices at Norwich and Glasgow at the middle of November:

Norwich

Fat 19c per lb.
Seconds 17½c per lb.
Stores \$74.72, \$92.34 and \$105.70 each.

Glasgow

Tops 15½c per lb. to 16c per lb.
Current 12½c per lb. to 14½c per lb.
Seconds 10¾c per lb. to 12c per lb.

CHAPTER XIX.

FINANCE PROBLEMS.

FINANCING THE LIVESTOCK INDUSTRY.

As Professor E. G. Nourse has stated (*American Agriculture and the European Market*, p. 62), the war-time trade in farming products was determined by a European market "whose consumptive demands were grotesquely enlarged by the under-production and over-consumption brought about by intense and widespread war conditions. It was highly abnormal, also, in that European buying power was artificially enlarged by the devices of war-time finance. Transactions were not limited by the ordinary practices of payment from current income, but the accumulated wealth of the past was drawn upon and the hopes of an extended future period were mortgaged through enormous borrowing operations." This abnormal factor in the demand for Canadian and United States agricultural products continued for approximately eighteen months after the end of the War. During this period, the strong European market was supported by additional loans both from Canada and the United States, but notably from the latter country. These loans were designed to aid the war-stricken nations to readjust their domestic economic problems, and to put them in a position to produce sufficient supplies again to meet normal requirements. During 1919 the United States made loans to its European Associates to the extent of nearly one billion dollars. In addition, American business men exported a huge volume of commodities on what were presumed to be short term commercial credits. These credit extensions operated in Canada and the United States to support the demand for basic commodities but particularly farm products. These loans, in the shape of Government advances, largely ceased by the end of 1919, and the burden of financing exports fell largely upon private business and the banks. It became clear that European obligation to private exporters on this continent could be liquidated only very slowly, and in some instances not at all. It also became clear that the real capacity of Europe to buy the products of the United States and Canada depended upon its ability to produce an export surplus with which to pay for imports. Added to all the above, there were currency and banking crises in Europe, and a frantic effort on the part of different Governments to balance their budgets by reducing imports to a minimum.

As a consequence, these combined factors operated to reduce materially the volume of the export trade in livestock products, particularly from the United States. There was a heavy decline in exports of United States fresh beef, pork and other meat products. The total value of exports of United States meat and meat products dropped from \$985,011,330 in 1919 to \$287,070,966 in 1921. There was no such corresponding drop in the volume of exports of other agricultural products, especially of the grains, though prices seriously declined. The real difficulty in the grain trade was that several large

crops had to be disposed of at sacrifice prices, because domestic values were determined by the price that could be secured for the exportable surplus. There must also be taken into account the fact that there had been a huge accumulation of food stocks by the Governments of the United States and the United Kingdom, in preparation for the carrying on of the War over a longer period. It is now known that there was also an enormous accumulation of food stocks by manufacturers, wholesalers, jobbers and retailers, who had bought in advance of requirements in anticipation of increased prices. Private individuals, in order to protect themselves against the rising cost of living, had in many cases laid in supplies of food for weeks in advance of actual need.

The banks, realising that credit had been over-extended on the basis of the situation that had developed, began to enforce a policy of contraction of loans, which inevitably forced down market values. As a consequence, farm products fell rapidly in price due to the efforts of dealers to dispose of their holdings. The packers found themselves in an extraordinarily difficult situation, attempting on the one hand to market surplus stocks, while on the other hand they were lending support to central livestock markets. Costs of production remained at high levels during this period of liquidation for practically every branch of agriculture, but particularly of the livestock industry. The heavy marketings of livestock, the decreased stocker and feeder purchases, and declining beef consumption combined to force prices to still lower levels. In the Corn Belt, particularly, supplies of cattle that had been bought at high prices by feeders were sacrificed for what they would bring under the conditions that obtained. Thus it was that the credit situation in the cattle industry became very serious. In the United States many large feeders emerged from the 1920-1921 feeding season entirely bankrupt.

The War Finance Corporation of the United States had, as a "byproduct" to its general activities, granted some aid to the livestock interests in 1918-1919. The first real relief agency, however, was the establishment of the Livestock Finance Corporation, which was backed by \$20,000,000 of eastern capital. Very little of this money, however, was actually advanced to farmers, as the conditions imposed could not be met. In August, 1921, the War Finance Corporation was authorised to make loans on agricultural products, the money being advanced through the medium of banks, financial institutions and co-operative organisations. Loan agencies were established at many different centres, managed by local bankers. The corporation encouraged the organisation of new loan companies with fresh capital, to afford assistance to livestock producers throughout the country. Capital was subscribed by bankers, business men, railroads, and to some extent by the farmers themselves. It is impossible to enter into the details, but it may be said that substantial relief was afforded to the industry by these measures. The most important benefit secured was the encouragement given to primary producers engaged in the livestock industry. The majority of stock growers had been unable to pay their debts at prevailing values for cattle, sheep and swine. As soon as it became evident that the War Finance Corporation would

extend loans on the basis of a reasonable valuation of livestock, producers became encouraged and ceased to consider that the industry was entirely ruined. The corporation undoubtedly was of great service, also, to banks and livestock loan companies in helping them to avoid failure. In this way some return to market values on the range for both sheep and cattle was again established. In the case of the sheep industry, producers were enabled to maintain their flocks, and ultimately to put the business on a profitable basis, due to the recovery of prices. In the cattle industry, however, progress was very slow, since the market remained depressed until the fall of 1925. The real value of the War Finance Corporation to the cattle industry was that it prevented a continuance of forced liquidation, and the utter demoralisation of prices. It was an emergency institution, and in no sense could be considered as a model for financing the cattle trade.

As mentioned above, low prices and high costs of production were disastrous to many producers, especially to those who were heavily involved in debt. It is evident that producers cannot quickly reduce their volume of production without involving themselves in losses. The grower has a large part of his fixed investments in his herds, and feed costs and maintenance continue under any set of market conditions. It is difficult to reduce expenses without actually disposing of the herd, or breaking up the business as a going concern. It is possible that the rancher and the cattle feeder are in a more favourable position than those who are breeders and feeders. Moreover, problems of market price, profits, and costs of production as they affect the producer, may be swept aside by banks and other creditors anxious to collect the proceeds of loans. It seems reasonable to say that the heaviest losses, therefore, fell upon the men actually engaged in the industry, rather than upon financial organisations, including banks, serving that industry.

It is well within the limits of moderation to say that hundreds of producers who had spent many years in the cattle business failed, particularly in the cattle states; while in Canada, many purebred herds that had been built up over a period of years at great sacrifice were broken up. Naturally, since the cattle business in the Corn Belt and on the range in the United States is a big enterprise involving the investment of huge sums of money, the problem of readjustment was even more difficult in the Republic than in Canada. In Saskatchewan and other Canadian provinces, however, producers of livestock, both dairy herds and beef animals, found themselves in great difficulties owing to the collapse of prices, the restriction of credit, and the continuing high costs of operation. Even as late as the beginning of 1925 there was abundant evidence both in the United States and Canada that the problem of placing the cattle industry on a paying basis still remained unsolved. This throws some light on the situation which has since developed, particularly during 1927. In the United States, liquidation of herds had continued on a large scale during 1924, total receipts at public stockyards amounting to 23,695,000 head compared with a slightly smaller number in 1923. Stocker and feeder shipments dropped to 3,978,000 head in 1924, a decrease of 575,000 compared

with 1923. This had a depressing effect on prices, because it resulted in throwing a larger number of animals into channels of consumption, as was indicated by the figures for 1924, which showed an increase in slaughtering of 820,000 as compared with 1923. At the beginning of 1925 the average farm price of cattle other than milch cows stood at \$24.29 per head, in the United States. This figure was almost as low as market values on January 1, 1922, and with this exception was the lowest since 1912. This price may be compared with the peak price of \$44.22 in 1919, and shows how heavily the livestock industry had suffered because of the steep fall in prices. Cattle at the beginning of 1925 then, were out of line with the general level of prices for all commodities, but what was of even greater significance, out of line with the greater number of other agricultural products. According to data compiled by the United States Bureau of Labour, there was a decline in the level of wholesale prices for all commodities from 1920 to 1924 of 28 per cent.; for farm products a decline of 26 per cent.; and for corn fed steers at Chicago, a decline of 35 per cent. Livestock producers were very apprehensive with respect to profitable prices for the immediate future. As is well known, the actual facts bearing on production and prices during the first half of 1925 offered little encouragement to breeders or feeders of cattle, whether in Canada or the United States. By the end of the year, favourable weather conditions over the Western range country produced excellent pastures, and this with the improving prices at Chicago and other basic markets aided materially in encouraging all interests connected with the cattle industry. The demand from large numbers of producers for range steers to restock ranches also had a tendency to harden prices. As has been pointed out by bankers and others connected with the cattle industry, this restocking movement was of value in establishing prices because it reduced the number of steers coming to the central markets, which were suitable for stockers and feeders. Such cattle made favourable price gains, particularly those of the lighter weights. Notwithstanding all this, a total of 24,660,000 cattle and calves arrived at all United States markets during 1925, which made by far the biggest year's receipts since 1915, with the exception of the war years 1918-1919. Stocker and feeder shipments from central markets to country points were, however, much smaller than the average for recent years with the exception of 1921. Under these conditions a larger volume of slaughtering was necessary. Real progress was made in the cattle industry following upon the exceptional marketings of 1925. The improvement was due chiefly to the decrease in the total number of cattle of all kinds on farms, the United States Department of Agriculture estimating holdings on January 1, 1926, at 59,829,000 head, as contrasted with 68,871,000 cattle on farms on January 1, 1920 (*U.S. Department of Agriculture Year Book, 1925*, p. 1033). In this connection it should be remembered that the pre-war average was barely 57,000,000 head. This decrease in numbers along with requirements for restocking ranches and farms created a speculative situation, in which calf and steer prices showed considerable advances. Indeed, it has been charged that speculation made such headway that

herds were frequently bought and sold several times by purely speculative operators before being sold to graziers or feeders. The advantages to farmers themselves were much smaller than were generally supposed by bankers and others who were concerned chiefly with liquidating frozen credits.

FINANCE AND INTERNAL MANAGEMENT.

Undoubtedly much remains to be done to finance livestock production and marketing before the industry is placed on the same basis as other branches of agriculture. Undoubtedly, also, the individual producer must lend his support to the improvement of the industry, if financing plans on a comprehensive and helpful scale are to be applied. Reference has already been made to the difficulties which individual producers have faced, such as rising land values (particularly in the older American states), relatively high wages, freight rates, and other factors which are beyond the control of the individual. It may be suggested, however, that there are other improvements bearing upon lower production cost over which the individual has control. Greater attention might well be given to the making of more adequate provision for feed supplies. This opens up a very big question, but our farmers scarcely need to be reminded that at times the feed problem, due to lack of foresight as well as climatic factors, has precipitated serious difficulties. The livestock industry is one in which, even when it is merely supplementary to grain farming, constant attention must be given to details. It is evident from what has been explained at length elsewhere that not only in the United Kingdom, but also in the United States, basic changes are occurring in the beef trade which demand a general improvement in the quality of stock. A recent survey, made by the Committee on Improving Livestock Breeding of the Institute of American Meat Packers, states that from 90 to 93 per cent. of cattle reaching the central markets grade only from fair to medium; that 2 to 5 per cent. fall in the "common" class; and only 4 to 6 per cent. in the good prime class. Mr. Thomas Cross, in charge of buying for R. Moore & Company, states (*Progressive Beef Cattle Raising*, p. 7) that "the profit in beef production in the future will increasingly lie in quality stock." This will mean, in all probability, that producers will be obliged to market younger animals of increased size. It is calculated that even only ten years ago, 75 per cent. of the beef taken by the trade was what is now regarded as heavy beef, whereas today only from 15 to 20 per cent. of such beef is taken. Some authorities maintain that the popular carcass weight has within a decade decreased at least two hundred pounds. Obviously to meet changes in the requirements of the trade, ranchers and other producers must seek for rapid growth in young stock. Yearlings are becoming more and more the typical product of the range country.

The problem of economical production will, therefore, remain at least as important for farmers carrying on diversified agriculture as well as for ranchers, as sound methods of marketing. As has been frequently stated, the cattle industry of Western Canada is becoming more and more important to thousands of small farms, and the large

ranch is relatively losing ground. With a smaller farm and a smaller herd it becomes possible to produce a superior animal, probably on a more economical and profitable basis. The farmer on the smaller farms should be able to give closer attention to his cattle, and should, therefore, secure a larger calf crop. As in Denmark, the smaller producers are in a position to give detailed care to problems of breeding and feeding, reducing losses from newborn calves and effecting other economies. It is stated that the calf crops in the herds of small producers approach 100 per cent. as contrasted with 50 to 65 per cent. in the herds of the average range operator. Livestock on these farms should utilise probably a great deal of feed that is a byproduct of grains and other crops, and give employment to hired help that otherwise could not be kept busy except when taking care of "peak load" farm requirements.

The support which the individual producer can give to a sound marketing organisation is of the greatest importance in stabilising his own production, and, therefore, in helping to solve the problem of finance. As already explained in detail, the better prices of the past year have been due to under-production in the United States, which draws attention sharply to the fact that over-production for the market is one of the dangers to the industry. To be sure "over-production" is a relative term, and regarded strictly from the point of view of the farmer, means a larger supply than can be disposed of at profitable prices. It is evident that Western producers must make every effort to adjust the supply to the effective demand, along the lines followed by men in the business world. This is all the more necessary because cattle and swine production has been characterised by marked swings from over-production to under-production. In part this has been due to the factors over which the farmer has had little or no control, such as weather conditions, the War period, etc. To be sure, experience has shown that it takes a period of about seven years to complete the cycle between the peak of prices and the lowest level of values. In other words, it is extremely difficult to increase production of cattle quickly for a rising market and almost equally difficult to liquidate surplus supplies. "Directed production" is, however, being achieved in other industries and should be sought for as well in the livestock field. President Coolidge's Agricultural Commission recommended, under Section 5 of *The Co-operative Marketing Act* favoured by the Administration, that associations of farmers should be given the right to collect, exchange, interpret and disseminate information concerning their own operations. Nevertheless, producers in the livestock field in the United States are not sufficiently organised to make much progress in this direction. It is to be hoped that, under a programme for marketing Western livestock, individual producers will be given such direction that they will be able more closely to adjust supplies to the effective world demand. It is equally obvious that such a programme based upon the idea of directing production in the livestock field, particularly in the case of cattle, must be planned on a long time basis. It is impossible to go into details of such a programme as is implied in "directed production," but it is plain that it would concern itself,

among other things, with the relative supplies of veal, baby beef, etc., that would be brought to market. It is also clear that such a plan would depend for its success upon strong support from the majority of producers. Leaders in the industry, whose opinions must be respected, believe that there is sufficient flexibility in methods of cattle production, and that there is a sufficiently long time in the production period to make it possible to secure a fairly accurate adjustment of supplies to effective demand. The need for more efficient marketing in the United States, as well as in Canada, is urgent. It has been calculated that about 40 per cent. of the year's total supply of cattle in the United States is marketed in less than three months, that is, in September, October and November. Added to this is the fact that over one-third of the United States fall marketings find their way into the stocker and feeder trade and these cattle return to the market within a fairly definite period at a later date. It is obvious, then, that livestock does not move to market as regularly as it should; and a study of the situation will disclose that the receipts are not, as has been explained in detail already, properly distributed among the various markets. It is imperative, therefore, that the livestock associations of the three prairie provinces, and later also of the Eastern provinces, should work together in harmony to secure the best results. It should be plain that the growth and usefulness of a livestock marketing association will be in direct proportion to the efficiency of its operations. It might even be possible later for the Saskatchewan Association to make arrangements to market feeders and stockers direct to the feed lots of finishers in the United States, thus eliminating expenses at stockyards and other charges.

FINANCING LIVESTOCK IN THE UNITED STATES.

Because of the vast proportions of the livestock industry in the United States—by far the most important branch of its agriculture—livestock financing has been specialised to a degree unknown in Canada. It is impossible within the limits of space available to do more than indicate in a general way the trend of development in this field in the Republic. As is well known, banking in the United States has been centralised in several important respects under the Federal Reserve System, but nevertheless, there are still many thousand small banks operating throughout the country dealing directly with the farmers. As has already been made clear, many of these banks sought the support of strong eastern institutions to form various emergency credit agencies, to deal with the problem of "frozen credit," notably in Western agricultural communities. In addition, livestock commission companies and cattle loan companies have conducted a considerable amount of financial transactions essential to the industry. Some information relative to the relief extended to the livestock industry in 1921, under the War Finance Corporation and other emergency institutions, has already been given. Under *The Agricultural Credits Act* of 1923, provision was made for extending loans to cover the so-called "barren period" that occurs between the short time loan and the long time mortgage loan, that is for periods extending from six months to three

years. Under the Intermediate Credit System so established it was hoped to free farming from its dependence upon commercial banking, under which loans had been limited to a period extending from ninety days to six months. While in actual practice such agricultural loans were renewed, frequently many times, before being finally liquidated, yet in periods of emergency these loans could not be relied upon. It has already been explained how United States and Canadian farmers were subjected to pressure in the post-war period of falling prices, and were compelled to liquidate at a time of utmost difficulty to the farming community. It should be said in all fairness that the Canadian banks were, on the whole, much more considerate of borrowers, and in many cases helped the farmer to hold on until he could readjust his affairs. In the United States Western farmers remain under the impression that the Federal Reserve System during this period failed adequately to protect the interests of agriculture. The Intermediate Credit System, according to the late Henry C. Wallace, Secretary of Agriculture, was "designed to give the farmer the sort of credit he needs to produce efficiently and market in an orderly way the produce of the farm. It is an effort by Congress to meet the need which has been felt for at least fifty years." The Act provides first, for the organisation of Federal Intermediate Credit Banks, and second, for National Agricultural Credit Corporations. The credit banks are twelve in number and are situated in the same cities as the Federal Land Banks, and are administered by the same board. The credit banks have an authorised capital of \$5,000,000 each, which is provided by the United States Treasury. These institutions can discount notes, drafts and other papers, originally given "for any agricultural purpose, or for the raising, breeding, fattening, or marketing of livestock." These credit banks can sell debentures, secured by agricultural paper, to the amount of ten times their capital and surplus. In this way an immense fund for cattle can be placed at the disposal of the United States farming community. Up to the present time only \$2,000,000 of the capital has been allocated by the Government to each bank. It should be kept in mind that these are strictly intermediary institutions, and cannot lend directly to the producers. They discount paper which comes to them from other financial agencies which do lend directly to the individual farmer. The National Agricultural Credit Corporations are divided into two classes: first, those with a capital of \$1,000,000 and upwards; and second, those with a minimum capital of \$250,000. The smaller corporation may make loans direct to the individual farmer for any legitimate farming object. They may also borrow money in the general investment field by issuing debentures to a maximum of ten times their capital and surplus. The larger corporations are intended to function chiefly as rediscount agencies at the more important financial and market centres. They may also make loans direct to producers, and have the additional privilege of rediscounting paper for other financial agencies. They thus perform two functions: they may lend to farmers, and may carry on an intermediary discount business. Both these types of institutions are under the supervision of the Comptroller of the Currency. It may be added that neither of these credit corpora-

tions has achieved much up to the present by way of affording assistance to agriculture. In 1925 Congress amended the Act to permit these corporations to rediscount their paper with the Federal Intermediate Credit Banks. It has been charged that there are not sufficient advantages in organising credit corporations to warrant their formation, as the smaller type is really only an ordinary livestock loan company with smaller privileges than are afforded private companies under various state laws.

There has been up to the present, comparatively little rediscounting of livestock paper with the Federal Intermediate Credit Banks, although various financial institutions were given the privilege of rediscount, including national and state banks, livestock loan companies, co-operative banks and associations and state agricultural credit corporations. The sheep industry has scarcely made use of the system at all, except for wool financing. At the present time the Intermediate Credit Banks are making every effort to give favourable consideration to the needs of the livestock industry. Special attention has been given within the last two years to such problems as the control of interest rates; the size of the individual loan made to any one financial organisation; control of the total volume of loans granted to any particular country and supervision of the loan field in general as it applies to agriculture.

It is not advocated that this system be duplicated in Canada, where conditions are dissimilar. Attention is drawn to the fact, however, that it is essential to recognise in a definite way the existence of the need to provide for intermediate credits for the livestock industry. Canadian banks are in general sufficiently powerful to provide credit for normal commercial transactions, including the commercial transactions of the farming community. It is plain, however, that the livestock industry with its slow turnover stands in need of stronger credit support, given on a more definite basis, than has been available in the past. Credit, along with other economic instruments, is a powerful instrument if furnished under the right conditions and with proper supervision to enable Western farmers to compete on equal terms with their competitors elsewhere.

IMPROVING LENDING METHODS.

It has been made clear that producers of livestock have been confronted with difficult problems, over some of which the individual farmer has little or no control. With respect to other problems, by co-operating on the right basis with the majority of his fellow farmers, he may secure material advantages. The great alteration that took place in the post-war period between the relative position of livestock producers and other classes, was due to general economic changes and maladjustments over which neither the individual farmer, nor the farming community as a whole, had any control. There were other difficulties that were due to lack of proper organisation of the livestock industry, particularly with respect to marketing. It now seems clear that both in the United States and Canada, but more particularly in

the former country, the collapse of prices was rendered more acute by lack of adequate financial support to the farming community. In the many instances in which farmers were compelled to sacrifice their herds in order to meet loan obligations, producers suffered a double disadvantage—heavier receipts at market centres held down prices, while the returns from sales were often insufficient to permit the farmer to meet his obligations at the bank or elsewhere.

In the United States, as has been explained above, a comprehensive scheme of agricultural credit has been developed, and it merely remains to make effective use of the available credit mechanism. In Canada, to the extent that intermediate credit has been granted, the outcome has been due not so much to a fixed policy on the part of the banks, but to the necessity of extending loans beyond the date of their maturity. Livestock loan companies have not gained a foothold in Canada, due in part to the fact that the industry is not as highly developed as in the United States, and in part to the fact that Canadian banks have been able to establish branches even in pioneer communities. It is doubtful whether the chartered banks of Canada can safely provide essential loans for the period necessary to breed, grow and finish livestock for the market. This is not to say that the Canadian banks have not made heavy loans to the livestock industry as a whole. The danger is, nevertheless, that such loans may become investments, whereas it is vital for the success of the Canadian banking system to keep the assets in a highly liquid form. It is necessary to develop for Canadian agriculture a scheme of finance that will furnish credit, under the right conditions, during the "barren period" that occurs between the short time bank loan and the mortgage loan.

It will be necessary, no matter what system of livestock marketing is finally approved by Western farmers, to furnish the individual producer with adequate credit to permit him to develop his herd and to conduct his feeding operations on an adequate basis. Any lending institution, however, which extends credit to the cattle industry must base that credit upon a real understanding of the needs of the industry. It should also be in a position to exercise some measure of control over management, thus preventing loss to lenders and producers alike. It is also evident that loans should be controlled in such a way as to prevent the development of a merely speculative movement, such as occurred in the years immediately preceding the collapse of prices. It may be justly said that farmers during the period referred to were urged to expand the livestock industry, rather than to adopt a conservative policy with respect to future market conditions. It will also be essential to provide livestock producers with necessary credit during those periods of unavoidable depression that appear from time to time to overtake all classes of enterprise. If such credit could be provided under the right conditions it would prevent the livestock producer from being compelled to rely upon his own resources at the very time when it is most difficult for him to do so. The working out of a comprehensive intermediate credit scheme for Canadian agriculture will require time and much attention to details, but it may be

said that something approaching the intermediate credit banks of the United States must be provided to give support to the farming community.

It is scarcely necessary to say that any sound system of finance must be related to a definite knowledge, not only of the borrower's financial condition, but of his capacity as a manager as well. Such credit analysis, however, should be undertaken by men who have a real understanding of the needs of the farming community. It is quite possible that there has been good ground for the complaints of Western farmers that their own peculiar problems have been handled, as far as credit is concerned, by men who have been more conversant with trade and commerce and manufacturing industries. There should be a careful credit analysis both to protect the borrower as well as the provider of credit, although the character test is of scarcely less importance. It is not necessary, of course, that the lending institution should meddle in the borrower's affairs, but it is necessary to see that he understands fully his financial position, so that he may be cautioned against undertaking a policy of over-expansion. Mr. F. M. Larmer (*Financing the Livestock Industry*, p. 262) has summed up admirably the form of statement which a livestock producer should make when securing credit. This statement should cover the following information:

- (1) The proportion of liquid assets to current liabilities.
- (2) The proportion of fixed assets to fixed liabilities.
- (3) The proportion of fixed assets to the liquid assets.
- (4) The maturity dates of the current liabilities.
- (5) The maturity dates of the fixed liabilities.
- (6) The net assets of the borrower which would be available, over and above the collateral itself, for meeting payments on the loan.
- (7) The amount and character of contingent liability.
- (8) The adequacy of the feed available for the livestock during the life of the loan.

From the standpoint of the individual producer, it is evident that he can materially improve his credit standing by placing his operations on a budget basis. Only when the borrower is able to make his yearly budget balance can he be considered to be in a sound position. That is to say, the industry must be made sufficiently profitable, under wise management, to disclose a net surplus at the end of the year. From this standpoint, credit extended under a board conversant with the farming industry in general, and the livestock industry in particular, should be in a position to give some aid to the borrower with respect to whether his production plans should disclose a profit. In other words, it is evident that the farmer's operations as a whole, and not one loan transaction in particular, should be the basis of credit extension, if the producer is to find himself in a position to carry his obligations even during a period of temporary depression. Finally, it may be added that as a rule a greater percentage can be loaned on steers than on cows, and on feeders than on range cattle. It is evident that loans on breeding herds must be made for a fairly long period, or else

renewals should be made by the banks under more definite arrangements than have characterised such operations in the past.

FINANCING THE PACKING INDUSTRY.

The other aspect of finance, important to the farmer as well as to the industrial enterprise, is the financing of the packing industry. Under present conditions the marketing of livestock on this continent depends to a large extent upon packer demand and, therefore, the growth of that demand means much for profitable agriculture. Simply stated, the problem of financing the packing business concerns the financing of a trade that begins with the producers of livestock and ends with the consumption of meat. Packers, supported by the bankers, make it possible to meet the requirements of consumers from the products of the ranch and the farm. As the industry is organised today, the packer necessarily must assume a large financial risk, since he acquires title to the livestock and pays cash for it in whatever volume it comes to market.

In buying the farmers' pigs, for example, the packer purchases on a cash basis, and if the business is very large he must borrow funds to take care of total transactions. The packer cannot get his money out of the pigs without converting them into pork and other hog products, and this means the handling of more money. Plant, equipment, and operations all must be financed. In other words, the packer must be able to meet his pay roll and to keep the plant in good order as a part of the entire process of turning the pig into pork and selling it.

As already explained, only fresh pork is as a rule sold immediately. Other cuts must be put into cure for a longer or shorter time; and this means spending more money to take care of manufacturing, accounting and business costs. In addition, large stocks must be carried in storage, and the various markets carefully organised to draw off these and other supplies. Pig products are marketed at many different centres in the form of bacon, hams, lard, etc. When the market is favourable, stocks are taken out of storage and sold, usually at a small profit per pound. Out of the proceeds of these sales interest must be paid on borrowed money, and expenses not already met provided for. Only after all costs of production have been met can a dividend be paid on the investment. Thus, it takes the combined activities of bankers, retailers, transportation companies and others to dispose of pig supplies brought forward by producers. These operations are rendered more complex and difficult when not only pigs are considered but also cattle, sheep and calves.

It is thus evident that packers must finance day to day transactions and also long-time operations involving heavy capital investments. The packers' chief concern, of course, is to have funds on hand to pay for daily purchases of livestock. These funds come chiefly from sales, the proceeds of which are concentrated at livestock centres. With respect to the manufacturing process itself, the packer must purchase containers, fuel, ice, salt and sugar. As a rule, an effort is made to pay for such raw materials promptly, to take advantage of the discount of 1 per cent. for payment within ten days. This represents a con-

siderable saving, as it is equivalent to an annual interest rate of 18 per cent. The pay roll must be met at regular intervals, in most cases weekly. Packers must arrange with their banks, either by making special deposits or by providing for a transfer of funds to the pay roll account, to meet these obligations. Among the large packers payment is made by cheque of a special design, and there is a time limit for their collection, both to protect the cheque and to insure its prompt return for cancellation. Thus, it will be seen that, up to this point, the packing business is practically on a cash basis.

Since all the above transactions are made practically on a cash basis, it becomes important for packers in turn to sell their goods on short-time credit. The selling organisation will vary with the size and location of the business. Some packers transact a more or less localised business, while others distribute their goods over a wide territory. As already described in some detail, the large packers also maintain branch houses; the largest United States enterprises having as many as three to four hundred branches. Collections from retailers are made at periods varying from one week to thirty days, the latter terms being confined almost entirely to southern trade. In the case of export sales, the packer sometimes maintains his own foreign branches, to which he ships on consignment. Packers who conduct their export business through agents, after loading the goods on board ship, present the documents to the banks. According to the special arrangements made, they may secure from sixty to eighty per cent. of the value of the goods against the agent. Open-price orders are for goods, the price of which is fixed at the market prices on arrival. C. I. F. terms represent a delivered price, comprising the cost, insurance and freight. It goes without saying that the packing business, the more widely it is connected with the wholesale and retail trade, involves also the organisation of an efficient credit department. Thus the packing company utilises its own capital in financing the business but also must borrow large amounts to provide proper facilities and equipment. Packers must operate to a large extent on borrowed money, then, owing to the fact that livestock is paid for in cash; that supplies can be purchased more cheaply at a discount which goes with cash payments; that it is necessary to place large supplies of meats in stores; and also because byproducts must be put through manufacturing processes which involve considerable periods of time. These borrowed funds are secured from bank loans, and through the sale of bonds, commercial paper, and debenture notes. It is evident that the financial policy will vary as between the various companies, and according to their different policies and efficiency of management. It is typical of modern industry that static conditions do not obtain—the business is either going forward or backward. If the business is expanding it is difficult to finance it entirely out of earnings, and recourse must, therefore, be made to the investment market. As pointed out by Mr. E. A. Cudahy, Jr. (*Financing the Packing Industry*), packers require capital funds chiefly for the following requirements:

- (1) To expand an old business along new lines.
- (2) To expand an old business in a new direction.

- (3) To buy out competitors or to combine with them.
- (4) To provide temporary working capital.
- (5) To change the type or terms of existing capital liabilities.
- (6) To refund or provide a means of payment for maturing security issues.
- (7) To change the ownership or form of organisation, or to enable present owners to withdraw their capital, or, in cases of reorganisation, to adjust conflicting ownership and creditor interests.

The packing industry, of course, secures the larger part of its current borrowed funds from the banks by establishing a line of credit. In the United States, in return for this accommodation it is the practice of the bank to require a deposit, ranging from ten to twenty per cent. on which the borrower receives no interest. This is a point usually overlooked by critics of the Canadian chartered banks, when comparing interest rates as between Canada and the United States. Other American banks require a minimum deposit on a loan, ten per cent. for example, even though the credit is not being used; and in addition, the usual twenty per cent. balance must be maintained when the loan is in actual use.

To operate the business successfully, capital must be profitably employed. At the end of the year, excess profits are usually reinvested in the business in the form of improvements, by adding to manufacturing or selling facilities, or they are carried to surplus reserve or invested outside the business. This brings up the important problem of how to maintain adequate reserves to take care of requirements during a period of financial strain, or of poor business. It demands a thorough knowledge of the packing business, exceptional judgment and efficient management, to keep capital fully employed, and at the same time to provide for those emergencies which, sooner or later, confront every business enterprise. The packers, along with the farmers, were hard hit during the period of price readjustment following the War. Some of the great United States packers were caught with huge quantities of beef and pork products, which they were unable to sell except at a heavy discount. Under these conditions, with a large part of their capital tied up in inventories, these concerns had to have recourse to the banks. It may well be, then, that a packing plant may be solvent, and yet because of the way its capital has been tied up in the business, its loan requirements may be regarded unfavourably by the banks, which in turn are forced to keep their assets liquid. "Frozen credits" were almost as serious a matter to the packers during this difficult period as they were to the farming community.

The amount of surplus which it is desirable to create will depend upon the needs of the particular business in question; but a strong cash position is particularly desirable in the packing industry, which operates largely on borrowed money, and, therefore, must have good credit. Short-time credit is essential in this industry both for buying raw materials and selling finished products, and also because of the

high ratio of volume of business to capital employed. No matter what form of control of the packing business is exercised in the future, these fundamental factors will continue to operate.

The development of the packing industry in Denmark is impressive, particularly with respect to the location of plants close to many producing centres. Packing on this continent is even more impressive from the standpoint of size, the increase in this respect being due to the characteristic geographical features of Canada and the United States. This development has been due to the nature of the domestic and export business of the two countries, a business which has required financing on a big scale, and the provision of large scale manufacturing and distributing facilities. It is evident that there is a close connection between the size of the units in the packing industry, and providing the farmer with a good market for his livestock.

Nevertheless, size is a relative term. The smaller units in Denmark have assuredly accomplished as much for the Danish farmer as have the larger packing plants for the farmers of the United States and Canada. The real problem here is to provide an economic unit which will be adapted to the work it undertakes to do. As Mr. E. A. Cudahy and other observers have pointed out, business experience has shown that units of various sizes may develop and prosper side by side. Assuredly it would be a wholesome development to bring the packing industry in the West into the closest possible touch with actual producers.

Nevertheless, it should be borne in mind that the packing industry of this continent has been comprised of numbers of small units existing side by side with great establishments. It has been a highly competitive industry, because the raw materials, that is livestock, are purchased in the open market. In those markets buyers and sellers have met under competitive conditions, and the privilege of doing business has been open to all. This is not to say that these market conditions cannot be improved by better organisation, especially on the part of producers. Nevertheless, it seems clear that final success in the packing industry, no matter what business form may be applied, will depend upon efficiency of management and the producing of quality products at the lowest possible costs.

CHAPTER XX.

SOME SPECIAL PROBLEMS IN PACKING AND MARKETING.

THE NEW ZEALAND EXPORT CONTROL PLAN.

Reference has already been made to the action taken by New Zealand and Australia to improve the marketing mechanism of their respective countries, with special reference to the exporting of food supplies to Great Britain. It is impossible to go into the details of the various schemes, which have met with more or less success, but a brief description of the New Zealand plan for marketing meat supplies in England may prove interesting and helpful in throwing some light on marketing problems in Canada. *The Meat Export Control Act*, passed in 1922, has met with marked success. This measure was adopted because of the difficulties with which New Zealand farmers were confronted in producing meat for export in the years immediately following the War. The net returns to producers had been seriously cut into, in part because of falling prices, and in part because of the charges payable in respect of freight and other services. Various conferences between representatives of the Government and meat producers were held; and it was finally decided that the economic welfare of the farming community would be promoted by the establishment of a Board of Control, with power to act as the agent of the producers. The board's activities were to be related especially to the preparation, storage and shipment of meats, and the disposal of these products beyond New Zealand. It may be added that all expenditures of the board are subject to audit on the same basis as public expenditures, and these expenditures further are guaranteed by the Government of New Zealand. The board consists of two members appointed by the Governor-General on the recommendation of the Minister of Agriculture, and five persons also appointed by the Governor-General to represent producers of meat for export, these members being elected by the producers themselves. The board is a body corporate, with perpetual succession and a common seal, and may hold real and personal property, and must assume the rights and responsibilities pertaining to bodies corporate.

It was also provided that an agency of the board should be set up in London, one member of which is appointed on the recommendation of the Minister of Agriculture, the other members being appointed by the board. It is the duty of the London Agency to keep the board advised as to current prices of meat as well as other matters relative to the disposal of New Zealand meat in England or elsewhere. In a general way, the London Agency puts into effect the policy as formulated by the board in New Zealand.

The board is designed to give effective control over the export, sale and distribution of New Zealand meat, especially in Great Britain;

and to that end it is given wide powers under *The Customs Act* of 1913 and its amendments, whereby meat exports from New Zealand are prohibited save in accordance with the determination of the board. Also under the Acts of 1908 and 1918 with respect to meat slaughtering and inspection, the board may control licenses granted thereunder in such a way as to conform with such conditions and restrictions as may be imposed under the Act of 1922.

The board is, therefore, empowered to determine from time to time the extent to which it shall be necessary to exercise control over the export of meat from New Zealand. In such case control shall operate from the date specified and given in conformity with the Act. Notice of control may be given either by service on owners of meat or those in possession of the same, or by publication in the public press. Control of meat supplies, as the board may determine, may be absolute or limited. When the board has assumed absolute control, the meat must be graded and shipped as the board directs, and must be sold and disposed of only by the board, or by direction of the board, in accordance with the time, manner and terms, determined at its discretion. Whenever the board assumes limited control, the extent of that control shall also be set forth by notice as above, or by specific agreement between the board and the owners of meat supplies. It need scarcely be added that the Act makes exceptions for contracts already entered into between producers or owners of meat supplies in New Zealand and buyers abroad.

In addition to these powers, the board may make arrangements for the slaughtering of stock where the meat is intended for export. Also, no contract for the carriage by sea of any meat to be exported from New Zealand shall be made save by the board, acting as the agent of the owners of the meat, or in conformity to conditions to be approved by the board.

It was also provided under the Act that a levy should be made on all meat exported, whether such meat is subject to the control of the board or not, the amount of the charges from time to time to be determined by the board, but not to exceed the maximum prescribed by the regulations under the Act. Along with the general powers referred to above, the board is given full authority with respect to the following matters:

- (1) The grading, handling, pooling and storage of meat.
- (2) The shipment of such meat on such terms and in such quantities as it thinks fit.
- (3) The sale and disposal of meat on such terms as it thinks advisable.
- (4) The insurance against loss of any such meat either in New Zealand or in transit and until disposed of, and
- (5) Making all necessary arrangements for the due discharge of its functions in handling, distributing and disposing of New Zealand meat.

Proceeds from sale of meat shall be applied as follows:

- (1) In payment of expenses and commissions, and other charges incurred by the board in the course of its business.
- (2) In payment of salaries, wages, etc.
- (3) In payment of travelling expenses, fees, and remuneration to members of the board or of the London agency.
- (4) In payment of advances made by the board to the owners of meat on the basis of the price of such meat.
- (5) In payment of interest and other charges on money advanced to the board by the Minister of Finance.
- (6) In providing a reserve fund to the extent deemed necessary to carry on the business.
- (7) In payment of the balance to the owners of meat controlled by the board according to a plan which takes into account the quantity and grade of meat handled by the board in respect of the producers or other owners of the meat.

The Act also authorises the Minister of Finance to guarantee advances made by the banks, etc., to the board to permit it in turn to make advance payments to owners of meat. An interesting feature of the New Zealand plan of marketing control is the direct providing of funds by the Minister of Finance to the board, if conditions so warrant. The funds so advanced are guaranteed by the revenues and the property of the board, and shall bear interest according to a rate to be determined by the Minister of Finance. The members of the board shall not be personally liable for any act or default of the board done or omitted to be done in good faith in the course of the operations of the board. It should be added that the Governor General may make regulations prescribing the maximum charges to be paid by way of levy on meat exported from New Zealand. In previous discussion attention was drawn to the strong financial position of the board. Beyond question this legislation has proved of the utmost value to New Zealand producers, in preventing the demoralisation of the market by dumping surplus supplies on the Smithfield Market and other markets in Great Britain. It has also resulted in giving producers a larger measure of control over ocean rates, and has brought benefits as well to the shipping companies, by enabling them to provide the necessary tonnage to take care of actual shipments. No attempt has been made to dictate prices in England; on the contrary, producers have been placed in a position to market their products in an orderly manner, and to adjust the supply to the effective demand.

Naturally, the success of such an organisation will depend in large part upon the quality of the management, and the loyalty and devotion of its officers. The board has been most fortunate in having in its service Mr. R. S. Forsyth, who is in charge of the London agency. Under his capable administration, policies based upon sound judgment have been put into effect, with the result that the agency has merited and secured the good will of the British trade. In a word, the

New Zealand Meat Producers' Board has achieved conspicuous success, and under conditions that have brought disaster to other marketing schemes that have suffered from lack of wise administration and control.

CATERING TO CONSUMER DEMAND.

Farmers in general, not only in Canada and the United States, but also in the United Kingdom, feel that there has been too wide a spread between farm values and retail prices. For example, the Government of Northern Ireland, in April, 1927, appointed a departmental committee to enquire, among other things, into the causes of the difference in prices obtained by producers and the prices charged



Headquarters of the Eastern Counties Co-operative Association, Ltd., Ipswich.

to consumers. This involved a study of methods of marketing agricultural products generally. This committee, consisting of twelve members, held fourteen sittings and heard some fifty witnesses, among whom were representatives of the Cattle Traders' Association, the Stock Owners' Association, and the Belfast Master Butchers' Association.

An examination was made of transport costs, due to the widespread belief that such costs in general were excessive. The railway companies, it was pointed out, have given sympathetic consideration to the problems arising under the economical transportation of agricultural products, and have given assurance that they are prepared to consider alleged injustices with a view to eliminating any unfair practice or unreasonable rate. It is charged, on the other hand, that the shipping companies have not given proper consideration to the

Irish agricultural industry; and examples were brought forward indicating that in some instances the cost of transportation of agricultural products from the United States and Germany to London was less than from Northern Ireland. The committee added that so keen had overseas competition become that unless something could be done to enable Irish farmers to compete on equal terms with overseas exporters there was grave danger that the Irish agricultural export business to Great Britain would fall away. It will thus be seen that transportation costs are a matter of importance even to producers who are as close to the British market as the farmers of Ireland.

With respect to the causes of this difference in prices obtained by producers and the prices charged to consumers, the report states:

"We are unable to secure such evidence as would enable us to clarify our minds regarding this problem. During our enquiries it became evident to us that the question of retail prices is one of the greatest intricacy, and is dependent on many factors. In our opinion, the problem of retail prices is so closely interwoven with such major matters as the incidence of taxation, general and local, direct and indirect; the hours of, and the remuneration for labour; and the post-war changes and the general standard of living, that it could only be fairly considered in its relationship to our existing social organisation."

The committee, however, expressed the conviction that the chain of distribution between producer and consumer was too long; and the remedy put forward was the encouragement in every possible way of more direct contact between sellers and buyers.

The committee also observed that strong representations were made to it with respect to the ten hours detention period for Irish livestock at British ports. It was added that Northern Ireland had been for many years free from serious animal diseases, and that it was unfair, therefore, to subject Irish livestock to such a rigorous examination at the British ports. The committee further observed that the detention of Irish animals in the cross-channel lairages is costly, not only directly but indirectly, by causing a serious depreciation in the condition of the animals and consequent loss of value. It was, therefore, recommended that the attention of the British authorities should be drawn to these matters, and that they should be urged substantially to curtail, if not to dispense with, this period of detention, so long as Northern Ireland remained free from serious animal diseases. It may be observed that if the Irish farmers believe they have a grievance in this subject, Canadian farmers have much greater cause for complaint, because their cattle are beyond question healthier and more vigorous than Irish livestock. The recommendations of this important committee may be summarised as follows:

- (1) Carrying companies should revise existing rates in the most complete and sympathetic manner with a view to making such concessions as will aid the Irish agricultural industry.
- (2) Postal rates for farm products should be reduced.
- (3) Adequate educative efforts should be undertaken to develop co-operation amongst the agricultural community.

(4) Primary education in rural districts should be given an agricultural trend.

(5) All farm production should be brought within a system of compulsory inspection.

(6) In the case of Irish livestock entering ports in Great Britain, the detention period should be substantially curtailed if not cancelled.

(7) The establishment of credit banks for the farming community should be considered.

The above report covers wider territory than can be traversed at the present time. It is important to observe, however, that the committee in its report relies mainly upon improving the quality of the product, and upon bettering marketing methods, to secure for the primary producer a larger share of the price paid by the consumer for farm products. Mr. John Burns, manager of P. Burns & Company, Calgary, has also drawn attention to the importance of quality production in securing better returns for Western farmers. The farmer who has used good judgment in the production end will command a good price for his products at market centres. It may be observed, however, that quality alone cannot, and often does not, assure the farmer a fair return above his production costs. Indeed, the whole field of agricultural production affords innumerable instances of quality production along with meagre, and often disastrous, returns to the producer. Nevertheless, it may be agreed, that along with a sound system of marketing quality must play a decisive rôle.

Western farmers should not be led to believe that co-operative marketing can be applied only to wheat, coarse grains, and other indestructible products. It is admitted that Canada's soil and climate give Western farmers a semi-monopoly in the production of a quality of wheat for which there is an almost universal demand. It is also admitted that wheat can be stored for comparatively long periods, and held for a favourable market, while cream, eggs, butter, livestock, etc., raise more intricate problems in fitting into a scheme of successful marketing. There are problems connected with manufacturing, with the application of scientific methods of protection from contamination, and the like. As already observed at some length, behind all these problems, lie basic problems of breeding and feeding. In a general way, the products mentioned above must be marketed within a limited period, and stored under expensive and difficult conditions. It is probably true that to secure the best results a degree of co-operation between the farmer and marketing agents is required that raises questions more intricate than emerge in the production and sale of grain.

Bearing in mind that quality alone will not guarantee a reasonable return to the farmer, particularly during periods of over-production and at times when primary markets are glutted, nevertheless, it is true that, other things being equal, it pays to produce those grades and qualities of livestock for which there is the keenest market demand. Attention has already been drawn to the fact that the British market has set its seal of approval on the 1,200-lb. steer of a finish in quality which only good breeding and careful feeding can produce. A study of market

prices extending over any considerable period will show that there are wide discrepancies in the prices secured for export steers, good butchers, good stockers, etc., on the one hand, and common butchers, cannerys and cutters, and common feeders, on the other. As Mr. John Burns has pointed out, there is little to be gained in raising heavy three and four year old steers for the market. Not only is the demand limited, but the expense of feeding a steer for such a length of time makes it unprofitable when compared with the younger, properly finished cattle. The preference of the domestic market is for baby beef, long yearlings, or two year olds, with a maximum weight of about 1,050 pounds. The home market will pay a good price for such beef, of which there is normally an under-supply.

The better quality and higher priced cuts are quickly absorbed by the retail trade, but that trade finds it difficult to cope with the problem of disposing of the cheaper cuts from inferior animals. As has been frequently pointed out such inferior animals fail to bring the producer a profit, and also tend to confuse the minds of consumers as to what are fair prices generally for the better quality product. This increases the difficulties of the retail trade in maintaining a good market for the livestock of Western farmers. Only a small part of low grade beef supplies can be marketed through the domestic retail trade. There is a market for a relatively small quantity as sausage meat, and also as boneless beef in Japan and Great Britain; but as Mr. Burns has pointed out, the disposal of the surplus of this low grade product is one of the packers' chief problems. The remedy is to be found chiefly in improving the breeding stock, in undertaking more winter feeding, and in devising methods for the more orderly marketing of cattle.

The same question of quality applies to the chilled beef trade with Great Britain. As Mr. Burns has pointed out, Canada has never established such a trade for the reason that it has not succeeded in producing the product in sufficient quantity and of a uniform quality. The livestock industry of the Argentine Republic, as has been noted in detail elsewhere, has a practical monopoly of this trade; but this position was gained only after an intensive study had been made of problems of feeding and breeding, and of the requirements of the British market. By concentrating on these aspects of the industry, the livestock producers of the Argentine have overcome such formidable obstacles as are met with in transporting perishable products a distance of 8,000 miles across the Equator to the markets of Great Britain. It is true that the farmers of the West have to face the difficulties of a long and expensive rail haul to Montreal or to tidewater, but the ocean voyage is approximately only some 3,000 miles to Liverpool, as compared with the much greater distance from the Argentine. To be sure, as has been indicated elsewhere, there are other factors that operate in favour of the Argentine producer, but the Canadian livestock industry should be able to hold its own at least in the forwarding of live animals to the British market.

It is necessary to recognise the fact that the consumer, both at home and abroad, is in a strategic position to determine ultimate production requirements. Consumers are in the strongest position to influence production not only because they absorb the products of agriculture, but because, also, their preferences must be met if Western farmers expect to hold their own with other competing groups. This consumer preference expresses itself indirectly through the various demands for different kinds and cuts of meat. Obviously, more definite knowledge of consumer preferences and buying habits is important in adjusting farm production and in controlling the channels of distribution to advantage. Conversely, a knowledge of consumer demand is essential in order to educate the public with respect to the value of quality products, thus indirectly sustaining the prices for farm animals finished with greater care and often on a somewhat higher cost basis than inferior types.

The retail trade comes in closest contact with consumers and, therefore, is in a position, through co-operation with wholesalers and primary producers, to make best use of the preferences shown by consumers for various meat products. The contact of the retail trade is direct, and any adjustments which this trade desires should be carefully studied not only by the packing interests but by the farming community. True, the preference of the retail trade, which rests upon the preference of customers, is reflected back to the wholesale trade, and in turn through packers and other agencies to the primary producer. This expresses itself in price variations, but frequently because the primary producer considers price fluctuations chiefly he may not recognise that these result, in greater or less degree, from consumer preferences. To be sure, other factors operate in bringing about changes in market values, but consumer demand is of fundamental importance. While much has been done both by the Federal and the Provincial Governments by way of making preliminary studies of consumer demand it is nevertheless true that this field of research has not been as yet given the recognition it merits in the livestock industry. By rationalising consumer demand, and carrying on the splendid educational work assumed by various governmental agencies and the farmers themselves, much can be done to avoid wastes in production and distribution. Undoubtedly, the farmers have educated themselves with respect to quality production to a much greater extent than consumers have studied their own special problems; and it is, therefore, among the latter group that educational work should be undertaken, in order that wastes may be eliminated and the farmers receive a fairer return for their products.

Consumer demand for a commodity may be expressed in various forms. First, the several quantities taken by consumer groups will vary with changes in quality and price. Then it is clear that an alteration in demand will occur if quality or price is not in line with consumer preference, provided that a substitute is available. An important feature of modern retail merchandising is the manner in which consumer demand is frequently related not so much to the commodity itself as to the services rendered by dealers. For example, there is often a strong preference for packaged goods, instead of goods in bulk

of a similar quality. Other details of the retail trade, such as is the delivery service or the granting of charge accounts, have a greater or less effect on different strata of consumer demand. Perhaps sufficient has been said to make it clear that the problems of the retail trade are bewilderingly complex, and that the quality of the product is not the sole factor in determining the nature and extent of the demand. The retailing of meat is subject to all the conditions imposed by consumer demand, and in those cases where organised farmers enter the field of direct marketing on a co-operative basis careful attention must be given to all of them. This aspect of the question was discussed in some detail in connection with the distribution of Danish bacon in the British market.

It may be readily seen that the retail meat trade is less routine in character than the trade in other foodstuffs. The dealers, therefore, require considerable experience and must make a thorough study of the business if they are to achieve success and meet the requirements of consumer demand. Perhaps the three most important characteristics of the fresh meat trade are found in the perishability of the product, the difficulty of standardising the products, and the difficulty of standardising market values. Meat is highly perishable and must be held at low temperatures or disposed of promptly. When it is preserved by freezing its value as fresh meat is greatly lessened by the process. As a result, it is frequently difficult to adjust supplies and demand, both in the wholesale and retail trade, and this tends to place prices on a somewhat speculative basis. The lack of understanding of various qualities of meat products presents a great difficulty in achieving standardisation. As a result, consumers are forced to place their confidence in great measure in the skill, knowledge, and honesty of dealers, and perhaps to a greater degree than in most other branches of the retail trade. The lack of uniformity in values is due to the variation in sides of beef, as well as to the variation in the relation of meat to bone, fat, etc. The dealer in purchasing a side of beef of good grade receives from 55 to 65 per cent. of lean meat, from 20 to 30 per cent. of visible fat, and from 10 to 15 per cent. bone. The portions of the carcass differ greatly in palatability and tenderness, while the amount of bone varies according to the nature of the cut, ranging from 40 to 50 per cent. in the shanks to a very small percentage in other portions. These percentages differ widely not only between different grades but also as between animals of the same grade. Obviously, the personal factor is important in dividing the animal into retail cuts, and in trimming away parts of the bone and fat.

Methods of merchandising and the economic conditions of the trade differ considerably in different parts of Canada and the United States. The urbanisation of the population, and the centralisation of slaughtering and meat packing have been important phases of the development of the retail meat business. In the earlier days, particularly in the summer season and in the more sparsely settled districts, meats sold at retail consisted largely of cured and dry salt products, the handling of which did not require special equipment. The fresh meats sold by the village or city butcher were of local slaughter, and except

in the winter were sold within two or three days. Under these conditions the equipment of the early shops was simple and crude in comparison with present day standards. The necessity of providing proper refrigerating facilities, the improving of sanitary conditions, and providing for the proper inspection of animals and premises have been important phases of the development of this trade. As already mentioned, the greater specialisation in slaughtering and packing due to the development of the livestock industry and the shifting of the centre of population have resulted largely in displacing the old fashioned butcher by the retail dealer who depends upon wholesale channels for his supplies. Changes in methods of distribution have been marked, and the percentage of meat passing through commercial channels has greatly increased. The invention of the refrigerator car in 1868 revolutionised the industry. In the United States, the business of shipping fresh meats under refrigeration at first encountered great difficulties, but the trade increased so rapidly that by 1885 it was apparent that this method of slaughtering cattle in the section of meat production, and shipping the fresh meat to centres of consumption, was destined largely to supersede the method of shipping cattle on the hoof and slaughtering them near the place of consumption. This development of the meat packing industry in Canada and the United States may be summed up as follows:

- (1) The settlement and development of Western territory devoted to stock raising.
- (2) The construction of a network of railways affording rapid and easy transportation between the various sections of the country.
- (3) Improvements in the methods of preserving and curing meats.
- (4) Introduction and improvement of mechanical processes of refrigeration, particularly the refrigerator car.
- (5) Utilisation of practically the entire animal, through development of the byproduct industries.
- (6) Adoption of efficient labour saving machinery, and
- (7) Rigid sanitary practices for safeguarding the health of the consumer.

Reference has already been made to the methods followed by the centralised packing plants in distributing their products. This type of distribution involves the construction of a complicated system, but the subordinate agencies function as a rule merely as channels of distribution, in which there is as a rule no change of ownership before the final transfer of the product to the retailer. Thus, there are fewer middlemen involved in the handling of dressed meat than of any other food product which is processed on a large scale. The smaller packers still employ commission merchants and independent wholesalers, but the larger packers have found it desirable to own and control their own facilities for distribution, including branch houses at strategic points. The packers have added other lines which have made necessary the construction of sausage factories, smoke houses, and store rooms for canned meat, lard and other products. The larger retailers may visit the branch houses and personally select their purchases, but

the smaller retailers as a rule buy through salesmen. The car route method is used in the livestock production areas and in those districts where the towns and villages are too small to support branch houses.

Express shipments are sent to retail dealers who are not on car routes, and the express companies also frequently handle special orders. As a result of the general trend in the development of the packing industry, jobbers have become of less importance. Their functions are now confined, for the most part, to the handling of the products of the smaller slaughtering plants and packers, reducing carcasses to the desired wholesale cuts, and the distributing of excess stocks or special lines. The jobbers purchase in comparatively large amounts and often under favourable market conditions, and sell in smaller quantities to the hotel and restaurant trade, and to retailers. In the United States the jobbing trade is especially large in Boston, where some of the Western packers are not directly represented.

The local slaughter of animals, in the opinion of Mr. H. C. Marshall of the United States Bureau of Agricultural Economics, affords certain advantages under special conditions. In the view of this authority, the primary producer may secure better returns from local slaughter, because certain expenses, among which transportation charges are important, are thereby eliminated. A local plant may also utilise animals that, because of insufficient number or unfinished condition, cannot profitably be shipped to central markets. Considerable savings may be made by producers and consumers jointly when the business is thus placed upon a local basis. Mr. Marshall, however, is of the opinion that the advantages of slaughtering in centralised establishments for the most part outweigh the disadvantages, basing his conclusion upon the great decrease in the amount of local slaughter in the United States, even where an adequate supply of livestock is available. In his opinion, also, the provision of rigid inspection of meats at the central establishments is a factor of greater consequence to the community than the economic advantage that may accrue from local slaughter. This opinion may be accepted when the local slaughter is in the hands of the retailer, or is conducted on a very small basis, but would not apply to slaughtering in a central abattoir.

The supreme importance of quality in meat production is recognised by producers who have made a study of market requirements. From observations of the packing industry in Denmark, it was clearly evident that the Danish producer has a sound knowledge of the requirements of the British trade as far as bacon and other pig products are concerned. Danish farmers have made a careful study of actual market requirements, and have been encouraged along this line by the grading system in operation, under which animals are graded on the rail. As intelligent production of animals for slaughter involves some knowledge of the standard requirements of the meat market, careful consideration should be given to methods of grading in Canada. It is evident that breeders and feeders who consider only the cost of production, and who ignore the demands of the meat trade, overlook one of the most important factors affecting the livestock market, and may thus fail in

following the most important lines of improving their breeding and feeding operations. It must be admitted, however, that primary producers have exceedingly limited opportunities for becoming familiar with the subject. The development of transportation, refrigeration, and of slaughtering and packing facilities has led to the establishment of large markets at points that make them practically inaccessible to the majority of producers. Moreover since animals are sold by live weight the shipper has been concerned chiefly with their value on foot, rather than their dressed yield. There is a further difficulty which greatly complicates the situation arising from the lack of definite classification in some branches of the meat trade. Also, some of the present classifications are complicated by variations in market conditions. The livestock industry and the packing business have become so vast and complex that it is exceedingly difficult for one not actually engaged in the meat business to secure definite facts, particularly in some of its branches. As mentioned above, there is a resulting gap between dealers and consumers, on the one hand, and primary producers on the other. It is essential ultimately to place the farmer in a position where he will understand the actual requirements of the meat trade, so that he may judge the carcass yield and quality of his animals as completely as buyers at terminal markets. The producer's knowledge of feeding, his study of the length of the feeding period and gains made, should place him in a position to estimate the value of his products as intelligently as buyers at market points who purchase on the basis of form, condition, and quality of the animals marketed.

Attention should be called to the fact that classification and grading are factors operating chiefly in the wholesale meat trade and not in the livestock market, and that they, therefore, cannot be related directly to live animals. Although in some instances the classes of meat correspond to those of livestock, in the main they are quoted and sold separately. Experts who have examined classifying and grading problems, including such men as Prof. Herbert W. Mumford and Prof. Louis D. Hall, whose researches were carried on in the Agricultural Experiment Station of the University of Illinois, draw attention to the fact that it is exceedingly difficult to establish the relation of the animal to its meat products. That there is such a relation is obvious, but it must be kept in mind that studies of live animals and of dressed carcasses should be kept in separate categories. A study of the wholesale and retail meat trades, however, should assist materially in placing classifying and grading of animals on a more exact and uniform basis than would otherwise be possible.

In a general way the divisions of the beef trade cover carcass beef, beef cuts, and cured beef products. The term "fresh beef" includes carcass beef and beef cuts. It refers both to the chilled beef and to frozen beef, the former of which is held in refrigeration at about 36 degrees F. for a few days or weeks only, while the latter refers to beef which is stored at 10 degrees to 15 degrees F. for several months. About four-fifths of the beef trade of the United States consists of fresh beef, the balance consisting of various products such as barrelled, smoked and canned beef, sausage meats, etc.

Classifying and grading any commodity consists merely in dividing it into lots which have similar characteristics. Each lot has essential factors which distinguish it from other groups, and these factors within any group should show only minimum variations. Thus, grading is an analytical process, proceeding from the general to the particular, and consisting in the grouping of individual units in such a way that they present the greatest possible uniformity. Classifying and grading, therefore, are complementary terms, both being part of a general process; but classification must precede grading. For example, all beef is first divided into a large number of units, such as steer beef, cow beef, etc. These large units are called classes. Each class may be further subdivided into smaller and more specific groups, such as prime steer beef, good steer beef, medium steer beef, etc. These smaller units are known as grades. The purpose of classifying and grading beef is to make possible a better determination of actual values. Obviously, when large quantities of beef varying widely in several important respects are under observation, it will be found difficult, if not impossible, to measure accurately the quality or deficiency of the lot as a whole. Therefore, classification and grading are essential to the marketing process. When the large unit is split up into smaller units variations within each group become so slight as to be negligible. Once standardisation has been achieved the quality of the product can readily be determined and related to market values. To facilitate the process certain labels are used in quoting beef prices, to make intelligible the qualities that are being considered by both sellers and buyers. When such conditions exist, classifying and grading have been accomplished.

The importance of grading has been pointed out by Messrs. W. C. Davis and C. V. Whalin, of the Bureau of Agricultural Economics, Washington. They state that:

"There are times during the progress of almost any commodity from producer to consumer when it is either inconvenient or impossible for the buyer to inspect, either personally or through an agent, the commodities he wishes to buy. Therefore, in order that persons may trade with one another in a given commodity, it is necessary first to draw up a code of rules for classifying and grading the commodity according to a certain standard, and second, to formulate a set of terms, the meaning of which is definitely fixed and generally understood. It is essential that both the buyer and seller use the same terms to describe a given article, and that both attach the same meaning to the terms used. When this usage becomes widespread and permanent we have a standard classification or system of grading which facilitates purchasing, lessens the volume of waste products to be handled by the middleman, and therefore improves the market for the producer."

It has been only within comparatively recent years that any serious attempt has been made to collect, organise, define, interpret and harmonise the various trade names and terms used in the United States and Canada to describe market classes and grades of livestock and dressed meats. Pioneer work in this field was undertaken at the University of Illinois under the direction of Prof. Herbert W. Mumford.

The Bureau of Agricultural Economics at Washington inaugurated its market reporting service on livestock and dressed meats in 1917, and used the researches of Professor Mumford as a basis for formulating a standard classification of market classes and grades, for use in reporting prices and trade conditions. The bureau has since elaborated a complete classification of livestock and dressed meats, and has published the results in a series of bulletins. It may be added that while some business in dressed beef has been done on the basis of specifications, the majority of transactions have been based largely on class, the grade being indicated in only the most general terms. For that reason selling on specification has not, as a rule, been successful and the great bulk of beef is still personally inspected before purchase.

THE WORK OF THE NATIONAL LIVESTOCK AND MEAT BOARD.

While various associations have been launched for the improvement of the livestock industry, perhaps the most significant departure in recent years has been the establishment of the National Livestock and Meat Board of the United States, which carries on educational and scientific work of great value. While this Board has been in existence for only about five years, it has already justified itself in many different directions. As population increases in Canada, and the domestic market becomes relatively more important, similar work must be undertaken in this country; therefore, a brief review of the activities of the National Livestock Board may be presented at this point.

The board came into being in response to an actual need in the industry. All classes connected with the industry, from primary producers to members of the retail trade, had long felt the need for some such central body which would protect their interests, but it was not until 1922 that definite action was taken. The organisation frankly champions the cause of the livestock and meat industries. Meat as a food has been singled out for many unfair attacks; and while many of these attacks rested upon quite inadequate premises, they contained a real menace to the livestock industry. The plan of organisation was sufficiently comprehensive to cover important educational and scientific phases of the livestock industry. The directors are appointed by various livestock associations, the National Livestock Exchange, the Institute of Meat Packers, and by leading meat retail organisations. The American Farm Bureau Federation is also represented on the board. As has been pointed out by Mr. J. W. Coverdale, one of the directors, this board is the only organisation of its kind in the world. It represents all the branches of a great industry, which have consolidated their efforts to promote a common cause.

The programme of the board has two chief objectives: first, the education of the public on the question of meat; and, second, research in the physical sciences and in economics. Its programme is national in scope, and in some respects even international. The board, in its scientific researches into the value of meats and the economic problems connected with production and distribution, has received material aid from universities and other educational bodies. It should be borne in

mind that the basic work of the board is to get before the public the simple truth concerning meat, and to dissipate erroneous conceptions sometimes broadcast by selfish interests. In no sense does it conduct an "eat more meat" campaign; it believes that by educating housewives and others with respect to the facts, meat will secure its proper place in the diet of the average household, along with vegetables, fruits and other foods. Funds are provided for the work from livestock shipped to market. Five cents is collected from the shipper on every car of livestock, and five cents from the buyer. These collections are made at a number of important markets, and additional support is being secured at other markets as required.

Among its activities, the board carries on educational work in the public schools and among housewives in the larger urban centres. In reaching the housewife, meat schools are held, and leaflets distributed containing information of value respecting qualities and prices of various meats. The board has received the co-operation, in these fields, of Departments of Agriculture in the United States, various universities, and organisations of local retailers and packers. In addition meat and livestock trains operate in certain states, giving demonstrations of food selection and preparation and types of required livestock. It need scarcely be added that considerable use is made of the radio in broadcasting lectures on the fundamental importance of the livestock industry to the economic stability of the nation.

The board prints and distributes a great deal of material on meats and the importance of the livestock industry, making use of the public schools and the universities as channels of distribution. It has also distributed a very large number of recipe books among the homes of the nation, and prepared special material for the press. In addition, it has used motion pictures to educate the public on certain important aspects of the livestock industry, and has held educational meat exhibits at various points. One of its chief functions is to combat false propaganda against meat. It is important to notice that in doing so the board is making use of scientific proof, based on research in the laboratories of several leading United States universities. On several different occasions when the market appeared to be threatened with an over-supply of various classes of livestock, the board has conducted nation-wide campaigns to increase consumption, and these have materially aided the producer. As Mr. Coverdale has stated, the board is deeply interested in the efforts to grade and mark carcass meat so that it may be easily recognised by the consumer. To aid in reaching a decision on grading and marking, extensive surveys were conducted with a view to securing the best judgment of all branches connected with the industry. Another important development has been the carrying on of research in the difficult field of meat quality and palatability, with a view to aiding primary producers in breeding and finishing the most desired types of animals for the market. This work is being supported by the United States Department of Agriculture, the American Society of Animal Production, and several state agricultural experiment stations. Important experiments are also going forward in the study of feeding, breeding, the effects of age, sex,

grass versus grain feeding, etc., on livestock production. The board has also lent its support to the carrying on of economic research, particularly in the retail trade. It was chiefly by the support given by the board that the United States Congress was induced to appropriate \$50,000 to enable the Bureau of Agricultural Economics at Washington to conduct researches in this field. In a word, it may be said that the board has been of the utmost value in unifying the efforts of all classes connected with the livestock and meat industries; and that it has accomplished much not only in the sphere of research but in getting the facts with respect to the food values of meat before the housewives of the nation. With the development of the livestock industry in Canada, and particularly with the growth of urban population, it will be necessary to establish some similar unifying organisation to protect the interests of livestock producers and of the meat trade in Canada.

RESTRICTIONS ON IMPORTATION OF CANADIAN CATTLE.

The Royal Commission which in 1921 investigated the importation of livestock into the United Kingdom for purposes other than immediate slaughter at the ports of landing, unanimously reported in favour of the removal of the embargo on Canadian cattle, which had obtained since 1892. As is well known the subject was discussed thoroughly in both Houses of Parliament in the summer of 1922, when the following regulations were passed:

1. In the House of Commons:

"That this House is of opinion that the time has arrived when the embargo on the import of Canadian cattle should be removed."

2. In the House of Lords:

"That this House accepts the conclusions of the Royal Commission that the Dominion of Canada is free from cattle plague, pleuro pneumonia, and foot-and-mouth disease, and is of opinion that steers from the Dominions might be admitted as store cattle to Great Britain, subject to precautions by means of quarantine being taken."

After these resolutions had been adopted Mr. Winston Churchill, who was then Colonial Secretary, and Sir Arthur Griffith Boscowen, the then Minister of Agriculture, met with representatives of the Canadian Government and concluded with them an agreement under which Canadian cattle might be imported into Great Britain. The British Minister of Agriculture announced in the House of Commons the terms of the agreement; and after explaining those applicable to Canadian store cattle, said:

"The landing of Canadian cattle capable of breeding will require the authority of a General Order which will be made by the Minister of Agriculture and Fisheries and laid in draft before both Houses of Parliament for 30 days (now 21 days under the above Act), and if either House before the expiration of that period presents an Address to His Majesty against the draft or any part thereof, no further proceedings shall be taken thereon. It is an essential part of any such Order that the animals must be accompanied by a Certificate by the authorised officer of the Dominion stating that the animals have within one month before shipment been tested effectively for tuberculosis and found free from that disease, and the Minister is given the fullest discretion as to the precautions to be enforced against the introduction of other diseases by these animals."

On December 15, 1922, The Importation of Animals Act received the Royal Assent, and presumably embodied the agreement with the Canadian Government. Section 1 of the Act provides for the importation of Canadian store cattle, while Section 2 provides that the Minister of Agriculture may "by Order authorise any Canadian animals other than store cattle to be landed in Great Britain," without being subject to slaughter at the port of landing, provided that the animals, within one month before shipment, were tested for tuberculosis, and found to be free therefrom; and if the animals are landed in accordance with such conditions to be prescribed in the Order as may, in the opinion of the Minister, be necessary or expedient for the prevention of the introduction of disease other than tuberculosis into Great Britain.

The Importation of Animals Act, 1922, became operative in April, 1923, and during that month Sir Robert Sanders proposed to lay before Parliament an Order under Section 2 which, in so far as it related to the importation of Canadian cows and heifers, provided that they had to be accompanied by a certificate guaranteeing certain lactation standards. Section 2 of the Act deals specifically with tuberculosis and other diseases. The Canadian Cattle Association, a powerful body representing many British communities, urban and rural, and those directly connected with the cattle trade, took the position that the proposed Order as framed was *ultra vires*, and that the Minister had no power whatsoever under the Act to add lactation standards to the conditions under which breeding cattle might be exported from Canada to Great Britain.

The question of the admission of Canadian breeding cattle, other than pedigree stock, was discussed at the Imperial Economic Conference in October, 1923, at which one of the Canadian representatives, Mr. Graham, said:

"We think that the Act, or that portion of the Act, providing for the admission of breeding cattle or cattle capable of breeding should be made operative. It must have been so intended, else it would not have been placed in the statute, and we feel that, while we cannot press it further, it is a fact that the British Government is not complying entirely with the understanding arrived at between the two Governments."

The Conference did not come to any specific resolution with regard to Canadian cattle, as will be seen from their decision, which reads as follows:

1. "That steps should be taken to promote inter-Imperial trade in pedigree stock throughout the Empire as a whole on reciprocal terms subject always to satisfactory precautions being taken against the introduction of disease.

2. "That a conference should be arranged between the representatives of His Majesty's Government and the Canadian Government to consider the question of the administrative interpretation of the terms of the Importation of Animals Act, 1922. The Minister of Agriculture undertook to make the necessary arrangements."

In May, 1925, The Importation of Pedigree Animals Act received the Royal Assent, but it deals solely with pedigree stock. In February of the previous year, during a debate in the House of Commons, the

Right Hon. Noel Buxton, then Minister of Agriculture, stated in connection with an offer from the Canadian Government to replace cattle slaughtered in Cheshire on account of foot-and-mouth disease, that:

"In regard to the question of cattle from Canada it is a fact that the Canadian Government expressed its readiness to supply the cattle which a section of the farmers, in Cheshire particularly, were anxious to have. The Canadian Government indicated that the cattle were there and that they would encourage the sale of them to British buyers. This subject came up at the Imperial Conference. To have allowed these cattle in would have gone rather beyond the decisions of the Conference. I had to consider the question in the interests of the larger number. There was a large proportion of the farming community who were very strongly opposed to the entrance of these cattle. I am a good Free Trader, and I satisfied myself that the real reason for excluding these particular cattle is in the interests of maintaining the standard of British cattle. We have arrived at a very much higher standard, and there is a certain danger if we allowed this importation. I am clear that, on the whole, it would not have been a sound thing to do."

It is apparent from this statement that Mr. Buxton regarded the decision of the Imperial Economic Conference as final, although that Conference did not come to any specific conclusion regarding the importation into Great Britain of Canadian grade animals capable of breeding. But, as has been stated by Sir John Lindsay, Secretary of the Free Importation of Canadian Cattle Association of Great Britain, it is reasonable to assume that provision for the Order would not have been made in the Act if it had not been the intention of Parliament that the Order should be made by the Minister as soon as the Act became operative. For various reasons successive Ministers of Agriculture have refused to make this Order, and have thereby failed to implement in its entirety the agreement made with the Canadian Government, and at the same time they have deprived the farmers of Great Britain of the right to obtain a supply of healthy non-tubercular dairy cows and heifers. Sir John Lindsay, in a circular letter to various local authorities and other influential bodies, made the following statement:

"The present Minister of Agriculture (the Right Hon. Walter Guinness), at an interview which representatives of the leading municipalities throughout the country and also of the co-operative movement and other bodies had with him on December 8, 1925, stated that for political and other reasons he could not see his way to make the Order in question. Lord Bledisloe, the Parliamentary Secretary to the Minister, who was also present at the interview, stated that to grant the request of the deputation might create for the Government, for the time being, a very unsatisfactory political position in the rural districts."

The Association which has been actively engaged in the effort to remove this unwarranted restriction on the importation of Canadian breeding stock into Great Britain, has also expressed the opinion that at least 50 per cent. of the dairy cows in Great Britain are tubercular; and that, mainly for political reasons, the public have been forced to consume milk produced by these animals. Aside altogether from the question as to the prevalence of tuberculosis in British dairy herds, there seems no good reason for denying to Canadian farmers the privileges that have been extended to Irish producers, particularly in view of the liberal conditions under which the Dominion Government now permits the importation into Canada of British pedigree stock. For the time

being, this question is of no great importance to Canadian producers, in view of the high prices prevailing in the United States markets, and the falling off of the export trade to Great Britain. This, however, does not lessen the need of removing this disability to the end that the Canadian cattle trade with Great Britain may ultimately again be placed on a sound and profitable basis.

CHAPTER XXI.

REVIEW AND GENERAL CONCLUSIONS.

The Canadian packing industry has held its own in Canada during 1927, there being a slight increase in slaughtering at inspected houses over 1926. The slaughterings of cattle amounted to 741,069, of hogs to 2,548,699, of calves to 464,034, and of sheep and lambs to 625,106, representing increases of 2.5, 2.7, 25 and 14.5 per cent., respectively, over the previous year. Cattle prices have steadily advanced, prices during the last six months showing higher values than at any previous time in Canada, except during the latter war years. The price of choice heavy steers on the Toronto market advanced from \$7.29 in January to \$11.50 in December, the latter figure contrasting with a price of \$7.40 in December, 1926. As has been pointed out by Mr. J. S. McLean of the Harris Abattoir Company, Limited, in an excellent review of the livestock situation, this has been due entirely to conditions obtaining in the United States. Cattle producers in that country took tremendous losses during the years of deflation, and for five years cattle prices were held to a low level relatively to prices of hogs and sheep. As has been pointed out in detail elsewhere, the effect was to reduce materially the cattle holdings of the United States, which brought about a reaction of prices in 1927. It became apparent early in the year that cattle supplies were not sufficient to supply the normal demand for beef, and prices steadily advanced until in October and November the best steers sold on the Chicago market for 18c per pound live weight, a price not hitherto realised except during the War.

Inevitably, these high prices drew to United States markets the surplus cattle of Canada, and established values on Canadian markets equal to American prices less duty and transportation costs. As already observed, shipments to Great Britain, which amounted to 80,000 in round numbers in 1926, practically disappeared in 1927. The collapse of this trade was due first, to the depressed industrial conditions of Great Britain, and second, to the South American beef war, which led to heavy shipments of Argentine chilled beef to British markets. In the opinion of Mr. J. S. McLean, it is becoming increasingly apparent that the normal cattle production of the United States cannot meet the normal beef requirements of that country, and that henceforth the natural export market for Canadian surplus cattle will be the United States. Mr. McLean also draws attention to the fact that not only producers, but packers as well, have made good profits on beef during 1927.

In hogs, on the other hand, 1927 was a year of declining prices. Thick smooth hogs on the Toronto market fell from \$11.25 in January to \$8.60 in December, as compared with \$10.50 for December of the previous year. Highest prices were secured during the first three months, and the lowest in the last two months of the year. This market

condition was an unfortunate one for the packing houses, for January, February and March are the months in which hog deliveries are heavy, the surplus product being stored for consumption in the summer when deliveries are light. As Mr. McLean points out, prices in the packing season are ordinarily lower than those of the summer time, but the reversal of these conditions during 1927 imposed losses on products carried forward for future consumption, losses due not only to a price decline, but also to heavy carrying charges.

In the export field, the unfavourable conditions of 1926 continued. In only two weeks out of the fifty-two have Canadian packers secured costs for their Wiltshire bacon shipped to Great Britain, and in the other fifty weeks the losses were very severe. Due to the pressure



One of Sir George A. Wills' noted Shorthorns on his Blagdon estate near Bristol.

of consignments of bacon from Continental countries—Denmark, Holland, Sweden and the Baltic States—bacon prices declined on the British market almost to pre-war levels, and the losses taken by Canadian exporters in 1926 were stated to have been enormous.

As already mentioned, these losses compelled a reorganisation of the Canadian packing industry. In February, 1927, the Harris Abattoir Company, Limited, purchased all the capital stock of Gunns, Limited. In June the same company purchased the physical assets and inventories of the Canadian Packing Company, Limited. When these transactions had been completed a holding company was formed, namely, Canada Packers, Limited, which in turn purchased the capital stock of the Harris Abattoir Company, which carried with it ownership of Gunns, and the Canadian Packing Company, and it also secured control of the William Davies Company, Inc. The capital stock

of these two companies was exchanged for preferred and common stock of Canada Packers, Limited. When these transactions had been completed the capitalisation of Canada Packers was as follows: Collateral trusts boards, \$2,500,000; 7 per cent. preferred stock, \$6,580,350; common stock, no par value, 200,000 shares.

As has been explained by Mr. J. S. McLean, this consolidation was designed to meet the difficult conditions which confronted Canadian packers following the War. The reorganisation of these important companies under unified control but followed similar consolidations elsewhere. The plant capacity of the packing industry had been greatly increased under the pressure of wartime demand for meats; and it was found that these plants could not be operated economically with the reduced volume of livestock available in the post-war years. As is well known, since 1918 several important plants have closed down; but too many remained for the actual requirements of the livestock industry. On the production side, the present consolidation makes possible very important operating economies. For example, killing operations have been discontinued in two plants, and it is expected that other economies will reduce operating expenses by more than \$500,000 per annum. Mr. McLean has expressed the opinion that the operating economies made possible by the consolidation may amount ultimately to approximately \$1,000,000 a year.

The domestic business of the companies operating under unified control has been placed on a much more satisfactory basis than was hitherto possible. Losses on the export trade have been cut by the simple expedient of reducing export volume. It is necessary to bear in mind that, in the packing industry, a very slight improvement in operating conditions may greatly affect profit and loss. Volume of production is so great in relation to capital that a loss of even $\frac{1}{4}$ c per pound may be ruinous, while, on the other hand, an equally small profit per pound is sufficient to put the industry on a sound basis. There is ground for believing that when the improvements now in hand are completed a profit of $\frac{1}{4}$ c per lb. on the turnover will be made. As Mr. McLean has emphasised, however, Canada Packers, Limited, does not by any means comprise the whole of the Canadian packing house industry. There still remain one large unit, namely, Swift Canadian Company, and several very active and well managed smaller units.

It is scarcely necessary to add that the packing plants have played the chief rôle in finding an export market for Canada's surplus cattle and hogs. The packing houses have rendered an invaluable service in this direction, and they can continue to give service only if producers can furnish the essential raw material in volume. As has been already stated, Danish packing is successful because there is an assured weekly delivery of hogs to the packing plants. It is volume which reduces production costs, not only in the packing plants but also on the farms. As far as domestic trade is concerned, the packing industry in 1927 showed an increase in volume, and profits were considerably better than they have been in recent years. Improved conditions within the packing industry itself, and the sound industrial situation in general,

have greatly strengthened the financial condition of the Canadian packing industry. Mr. McLean draws attention to the decrease in losses from bad debts, and to the very encouraging outlook for 1928 with respect to volume of production and profitable markets.

As Mr. H. S. Arkell, Dominion Livestock Commissioner, has pointed out, despite the price gains in 1926 for the ordinary grades of stock, prices for the better class of cattle lagged behind. During 1927, however, the better classes of cattle came into their own, and price responded to quality. As noted elsewhere, prices at the stockyards have been averaging from \$1.50 to \$3.00 per cwt. higher than for 1926, and on the basis of marketings equal to those of 1926 the increase in gross revenue from cattle marketed through the public stockyards should be around \$20,000,000. This remarkable improvement has, for the time being at least, offset the collapse of the cattle trade with Great Britain.

The satisfactory conditions in the cattle industry are due to causes already explained, along with the increased industrial expansion of the Dominion itself. It is calculated that the per capita wealth in Canada today is greater than that of any other country in the world; and the purchasing power of the Canadian people has been carried to a new and higher level. Exports of cattle, and beef in terms of cattle, have exceeded those of 1926 by some 40,000 head, while export prices have been at least 25 per cent. higher. There was a deficit in the movement of cattle to Great Britain by over 60,000 head, and of beef by upwards of 178,000 lbs. according to the latest figures available. On the other hand, the latest available data indicate that Canada sold approximately 120,000 head of cattle to the United States as compared with 64,000 for the corresponding period of 1926, and approximately 38,000,000 lbs. of beef as compared with 13,000,000 lbs. for the same period of 1926. The United States demand has not been confined, as already noted, to finished cattle, but has been directed also to stockers and feeders. Mr. Arkell is of the opinion that neither in the United States nor in Canada is there a shortage of cattle, but there is a shortage of good beef. In this authority's opinion, it is essential to produce more and better beef on fewer animals. An outstanding feature of the export business has been the sharp United States demand for purebred and good grade dairy cows. This demand has been important in maintaining and increasing the prices of such kinds of cattle, both at private and public sales. Mr. Arkell states that so far the exportation of these cattle has not had a serious effect on milk production in this country. Probably the exports of purebred cattle have not exceeded 600 head per month. There is an abundance of rough feed in Canada, and owing to the poor harvesting season a considerable quantity of the grains may be best marketed through livestock.

An encouraging feature of the hog situation is that although prices have fallen to unsatisfactory levels, they have probably reached the bottom of the trough, and the movement of prices should shortly swing upward. Producers have not been stampeded by low prices, and there is no indication that they desire to go out of the business, despite the

fact that there has been little or no profit in hogs at the prevailing rates for grain and millfeeds. Up to the beginning of December, 1927, the marketings at stockyards and packing plants combined totalled 2,624,345 head, as compared with 2,445,582 head for the same period of 1926. In other words, 1927 showed no wide variation over the marketings for 1926. Up to the end of the first week of December, 1927, Canada sold Great Britain only approximately 45,000,000 lbs. of bacon, as compared with 75,000,000 lbs. for the same period in 1926. This, of course, indicates a heavy curtailment of business in Canada's chief overseas market, and accounts to some extent for the weak price situation in Canada. Nevertheless, for the time being, weak prices in hogs and their products represent a world wide condition. The Dominion has been exceedingly fortunate in having an alternative market in the United States, which has absorbed Canadian live hogs, during this period, up to 179,000 head as compared with 34,000 in 1926. As already observed, Canada has also forwarded to the American market heavy shipments of pork products. There is every reason for believing that Canada will eventually assume its former position in the world's bacon market; and, therefore, it is essential to work toward quality and volume in anticipation of future market requirements.

As observed elsewhere in this study, the co-operative marketing movement is gaining headway in several European countries, and marketing problems are receiving consideration by farmers from Great Britain to New Zealand, such as they have never had before. Denmark, perhaps, has achieved the most conspicuous success, due to the comparatively small size of the country, the texture of the population, proximity to British markets, and the high standards of education in the rural community. On this Continent, both in Canada and the United States, co-operation did not produce significant results until comparatively recent years. Nevertheless, it should be borne in mind that the National Grange of the United States as far back as 1874 adopted the following general resolution: "We propose meeting together, talking together, working together, buying together, selling together, and, in general, acting together for our mutual protection and advancement, as occasion may require." Due to reasons into which it is not necessary to enter at present, the farmers of the United States and Canada failed to co-operate effectively along economic lines, notwithstanding the efforts of many devoted leaders in the industry. For the most part, such success as was achieved was comparatively local in nature, and did not touch the farming industry as a whole. The pioneer farmers' organisation of Western Canada undoubtedly made a real contribution to the social and economic well being of the people; but aside from the launching of the Saskatchewan Co-operative Elevator Co., Ltd., there was no great achievement in the field of distribution until the formation of the grain marketing agencies. The difficult situation created for the agricultural industry after the close of the war compelled farmers to investigate the possibility of co-operative marketing as an economic instrument to maintain and improve their living standards. In other words, the grain pools were based upon a



Co-operative Wholesale Society Packing Fording Meat at Liverpool.

fundamental principle in co-operation—that is, they were “born of necessity.” Emphasis should be given to the fact that the co-operative movement in Saskatchewan and the other prairie provinces should not be endangered by the launching of marketing schemes that are not related to necessity; in other words, where the marketing functions are being satisfactorily performed, it is not only expedient and economically wasteful, but dangerous to the great grain co-operatives, to launch marketing schemes that meet no fundamental need and which, therefore, are bound to fail. Where such necessity exists, however, no matter what the risks may be, farmers should boldly organise to control their own economic life.

In a general way the co-operative movement may find support when there is too wide a discrepancy between local prices and actual terminal market prices, when there is real reason for believing that too small a percentage of the consumer's dollar appears in the net price paid to the farmer, and when there are difficulties in the way of finding the most profitable markets for perishable products such as livestock and the like. It is not necessary to repeat again that other economies, such as administrative savings and shipping costs, etc., may be possible through the linking up of a local with a central organisation. Whatever else a central organisation can effect, it is worth while to give farmers definite information and the actual facts with respect to price control, or price manipulation, by local or terminal buyers. It may also be possible to eliminate middlemen who are carried by the industry, and whose volume of business individually does not permit of its economical operation. Without entering into details, it may be added that no sound co-operative marketing organisation can be established on a policy of criticism and hostility. It must, on the contrary, be concerned with constructive policies if the organisation is to endure. It must be kept in mind that “necessity,” in the sense used above, refers not merely to legitimate grievances which the farmers may have, but also to worth while economies that may be secured by organising marketing on a new basis.

Neither is it requisite, in this connection, to review the marketing functions as a whole, for perhaps the nature of assembling, grading and standardising, packing and processing, and the importance of transportation, storage and cold storage, along with financing have received sufficient attention. It is essential, however, to emphasise the great need for orderly marketing, for this is the most significant function of distribution, as far as producers are concerned. The discovery of the most advantageous market is, generally speaking, beyond the scope of the individual producer, particularly when products are widely distributed both at home and abroad. The Danes, in marketing bacon, eggs, butter and other products, have wisely made use of men with special knowledge and experience, so that the products enter the market in the most economical manner possible. Assuredly, sound marketing demands knowledge and experience, both of what should be produced and the nature of the various strata of market demand. Only a central organisation can make a systematic survey of markets, and relate available supplies to the effective domestic and external demand.

for basic farm commodities. It seems fair to say that in this field commercial interests have found it the most difficult to give farmers real service, and it is here also that the weaknesses of commercial marketing are obvious. Farmers have carried the burden of duplication of service, of lack of proper co-ordination between private marketing agencies, of excessive operating costs in some instances, and of the failure of private concerns to really grapple with problems of surplus supplies and of deficits as from year to year. It is not a sufficient answer to say that supplies will rise and fall in response to price fluctuations. This is in general true, but in the process many producers suffer unnecessary economic loss.

As explained elsewhere in detail, the Danes have achieved success by relating marketing to quality production, and thus avoiding larger depressed prices for a poor product. Only after a long process of trial and error were they able to secure an even output, and thus reduce waste to a minimum. Quality of product has been secured by a system of differential prices, based on grading. It is essential, either in marketing livestock or any other agricultural product, to make clear to the body of producers that only quality production can hold the market and secure the best available price. It was equally necessary to standardise production, and to avoid the marketing of a wide variety of different types and grades. Both the federal and the provincial governments have emphasised the need of producing uniform types and avoiding waste from increasing the variety of livestock holdings. In time, a central marketing organisation can accomplish much by giving producers definite guidance and information on these basic considerations.

Control of the flow of the product, insofar as practicable, is equally important to secure orderly marketing. This involves the adjustment of production to effective demand, and the avoidance of market gluts. In part this may be accomplished by directing livestock supplies to the most favourable markets, not an easy matter, as many producers have discovered by studying market reports alone. A central agency can secure fairly definite information with respect to actual requirements at different markets, and so direct the movement of livestock from the farms as to avoid useless costs in transportation. It has been explained above that even in Denmark no attempt is made, except in the case of the Danish Co-operative and Trading Company, to enter the retail field. Co-operative marketing, on the whole, should not be carried beyond the wholesale or terminal market stage. With respect to financing large scale co-operative marketing, control of a sufficient amount of the supply of the commodity, along with proper storage facilities, enables the association to meet and solve the problem. The method followed in Denmark has been discussed in detail, and Canadian farmers should give it careful consideration. It is not argued that the central organisation can control the price; but it may secure a better price by properly adjusting supplies to market requirements. Naturally the gains resulting from collective bargaining will vary from commodity to commodity. For example, milk producers in the United States, and to some extent in Canada, have achieved conspicuous

success along this line since they work in a limited market. Discussion of co-operative experiments in Great Britain has made clear the weaknesses that develop where there is no membership contract, or where the contract is not strictly enforced. It has become sufficiently clear that a binding agreement of this kind is necessary to strengthen the association on its business side. It is equally clear that producers will ultimately leave any organisation that does not yield service and profit; but it is almost impossible to render that service unless a business relationship is established on a contractual basis. It has already been made plain that no small part of the success of the Danish co-operatives is due to the fact that producers, by court action, may be forced to live up to the conditions under which they joined the association, although there may not be a specific contract. The mere fact that they have signed as members is interpreted by the court as tantamount to their having established a contractual relationship with the association. The contract can continue to be a valuable instrument only in so far as the organisation works along sound, effective, and educational lines. The method of making advance payments, as in Denmark, and deferring final settlements until the products are sold, is also a sound marketing policy. *Care should be taken that the advance payment is well under the probable ultimate market price for the pooled supply, in order that the organisation shall not become involved in financial difficulties.* This appears to be a point difficult for many producers to grasp and the amount of the initial payment is often seized upon and criticised by opponents to the co-operative movement. It is quite true that producers' co-operatives have had their difficulties in the United States, and even disasters. Only experience and loyalty on the part of the membership can overcome these difficulties, and finally place co-operative marketing on a permanent basis. The conception of orderly marketing, whatever the interpretation given, has come to stay. The commercial organisations themselves have emphasised the fact that one important feature of Danish co-operation making for success has been regularity in volume of supply throughout the year, which in turn makes possible more orderly or consistent marketing.

Grading and standardising are essential features of marketing associations in which the product is sold on a pool basis. Here the identity of the individual farmer's produce is lost; and the entire supply is sold over a fixed period in such a way as to give the producer the average price for that period. The pooling system is scarcely workable unless the output of each producer can be graded and merged with the supplies of other producers. Only so is it possible to feed the market, and control the supply of the commodity in such a way as to meet effective demand. Unless grading is possible, pooling cannot be carried into effect. With respect to livestock, without grading, standardising and pooling, a central marketing agency performs largely the functions of a commission house. This in itself may be worth while, since it gives producers control of their products and also an understanding of actual market requirements.

As has been pointed out, however, by Mr. C. E. Gibbons, of the Bureau of Agricultural Economics, Washington, ever since the estab-

lishment of central livestock markets there has been considerable confusion, much disappointment, loss and waste, because of the difficulty in describing market transactions in such a way that the farmer, or the producer on the range, and even the small slaughterers at distant packing centres, could understand exactly market transactions. The livestock markets, in some cases, had their own standards, their individual preferences, and their special methods of doing business. As Mr. Gibbons has stated, these matters are thoroughly understood by men who are on the market daily; but it has been difficult, and almost impossible, under the conditions prevailing in the past, to make market facts clear and unequivocal to farmers as a whole and dealers at remote points. These difficulties have arisen because of the variety of definitions of terms and the shifting of standards on the various markets. It has, therefore, been found necessary in the United States to establish a complete set of terms and names to describe the various groups into which livestock is sorted at central markets; and to enunciate definite and fixed definitions which can be interpreted in the same way by producers, shippers, traders, packers, buyers, or anyone else connected with the industry. This will facilitate livestock marketing and tend to eliminate loss and waste.

Because livestock does not depend on a single market, it has become a more liquid commodity than it was some years ago. Livestock marketing, therefore, is now a technical and may be a scientific procedure. Livestock usually moves to those centres where supplies are low, and where the highest prices are obtainable, which tends toward bringing demand and supply into equilibrium. As Mr. Gibbons points out, the maximum development of this stabilising action is largely dependent on the quick transmission of accurate and definite market news, which in turn depends upon the establishment of standards with respect to class, grading and trade terms used in the description of livestock.

As already explained, the term "classification" is applied in a broad sense for the purpose of dividing meat animals into classes, subclasses and grades; but strictly speaking classifying should be limited to dividing animals into the major subdivisions. Grading, on the other hand, comprises the last process of sorting, and results in creating a smaller but a more uniform group than does classifying. The grade of a pen or load of livestock is simply, as Mr. Gibbons makes clear, an average of the grades of the individual which makes up the lot.

Three terms are of special importance in grading: namely, conformation, finish and quality. The entire schedule is largely based on these three characteristics, and variations in them: but the three characteristics are very closely related, and this frequently causes difficulty to men actually handling livestock. It is impossible to have a high degree of conformation without a fair degree of finish and quality. As a result, many difficulties have arisen in describing precisely the various grades of livestock moving to market. Nevertheless, these three characteristics are fundamental, because they are inherent in the animal, and are not subject to mere trade preferences in the

use of terms. Moreover, all meat animals possess a certain degree of each of these characteristics—conformation, finish and quality. The chief differences between animals, from the standpoint of meat production, consist in variations in the above quality. Nevertheless, since grade is not determined by any single characteristic, but is a result of all three, it is evident that no grade can represent an absolutely uniform product. On the contrary, each grade has an upper and lower limit, and this explains the difficulty of always placing animals, whether cattle or swine, in their proper grade. Manifestly, it is a difficult problem to properly allocate the animals in the many subclasses of livestock to their proper grades. It is not easy to decide whether the Danish method, for example, of grading bacon hogs on the rail offers sufficient advantages to alter the method of grading practised in Canada and the United States.

To place the Canadian bacon industry on a sound and permanent basis every effort must be made to carry out the programme for a national hog policy, instituted in 1922. Much will depend upon educating the producers to develop a uniform type of bacon hog. Simply stated, this involves the organisation of production. Without doubt, a regular supply of the right type of pig is what is urgently demanded to place the industry on a sound basis, and this will remain true whether the supply is sold to packers as under present conditions, or whether finally producers process hogs on their own account. The right type of pig is that which will produce the meat which the public demands, particularly British consumers, if Western farmers expect to enter the British market to a serious extent. The bacon pig must, therefore, not only be of the right type, but like the bacon itself, it must be uniform. Without uniformity of product, as emphasised in detail elsewhere, the customer of today may fail to be the customer of tomorrow. Perhaps in this, more than in any other particular, the Danes have shown their superiority to Canadian and other producers.

Uniformity of such a high degree is difficult to obtain in Western Canada where there are so many different breeds of pigs. Breeders, to be sure, advance plausible argument in favour of variety of breeds, and against the policy followed in Denmark, by emphasising the importance of the alternative outlet provided at the present for the fresh pork trade by the United States, and the desirability, therefore, of maintaining different breeds of varying type to meet the requirements of both the British and American markets. If, however, this position were well founded, the proper course would be to limit the number of breeds to, say, two only—one being selected for the production of bacon, and the other for the production of pork. The objections to the adoption of such a policy are serious, because success must rest on the whole-hearted support of the breeding societies and producers. To secure for Canadian pigs the position they ought to occupy in the overseas trade, and in the United States market, actualities must be first taken into account. With the present multiplicity of breeds, probably best progress would be made by stating officially, with the sympathetic approval of the breed societies, clear specifications for: (1) the standard bacon pig, (2) the standard porker. The breeds then

existing, by careful selection and breeding, could be made to conform to the specifications of either standards, according to the ultimate importance of these two great markets for the Canadian surplus. To meet differences in the public taste in Great Britain, in the matter of bacon, in different parts of the country, carcasses can be sorted at different bacon factories, as is done regularly by foreign competitors. Some expert breeders are of the opinion that it is not even necessary to have two different specifications for bacon pigs and porkers, but believe that a breed or cross which will produce a prime bacon pig can, by varying the feeding and management after weaning, be made to produce a reasonably good porker. Nevertheless, there is a wide difference of opinion among experts on this matter, and the two specifications noted above may be the more desirable policy to apply. The problem is scarcely less urgent in Great Britain. In this connection, the following abstract from a letter by a leading firm of British curers may be cited: "We are constantly being pressed to specify a breed which will meet present-day needs. There is no such breed. The right sort of pig can be evolved by careful feeding and breeding. Provided we get a long, lean cutting pig, thick in the streak, lean in the back, firm in meat, and with a moderately small head, we do not care what the breed is, nor the colour."

Many shrewd producers in Canada, who have achieved success in the production of pigs, are of the opinion that the breed which can fulfil the above conditions is suitable either for pork or bacon. As stated elsewhere, however, producers cannot be expected quickly to respond to a national policy for producing the right type of hog, and in sufficient numbers, unless they have a reasonable assurance of receiving a fair return on their investment and labour. Hence, every effort must be made to perfect the marketing mechanism to the end that the farmer shall receive the utmost possible percentage of the consumer's dollar. This does not overlook the fact that quality production is an essential feature of successful marketing. Care should be taken, in devising plans for improving quality, that the organised farmers of Western Canada should be represented on important bodies, such as the Dominion Swine Committee.

A considerable number of producers also take the position that the present system in grading hogs on a live basis, which affects the price the farmer receives, is not satisfactory. It is contended that the system is not as accurate as that employed in Denmark, England and some other countries, where hogs are paid for on the basis of grade and weight on the rail, as dressed carcasses. The Danes apparently are satisfied with their system, as far as can be learned by personal investigation of the problem by discussing it with officials who represent them. It is argued that this method of grading affords the nearest approach to a fair and accurate basis to determine the market value of hogs. It is generally admitted that judging by the eye, as in Canada and the United States, can never be accurate, even when the work is performed by experts. In support of this position the results of a bacon-hog exhibit at the Highland Show may be cited. In this case, although the judge was an expert bacon curer of long ex-

perience, pigs placed first on the hoof did not maintain their position as bacon. External appearance may vary considerably from actual carcass conformation. At this Show the animals placed first in the bacon stage of the competition had been unplaced as live pigs. At the Alberta Bacon Breeders' Competition the results, as published December 2, 1924, gave the following facts: The hogs which graded first when alive were put down to twelfth place when dressed; and the hogs that were placed eleventh down the list when alive, were raised to first place on the rail. There were 38 entries, and a difference of 22 with respect to the relative position as between the hogs alive and dressed. At the Regina Show, held in November, 1927, the carcass classes judged on November 3, yielded the following results:

BACON HOGS.

Carcass awards	Live awards
1. H. Thompson & Sons, Whitewood	3
2. Philip Leech, Baring	2
3. E F Richardson, Semans	1

The reduction of the premium on selects is not considered, by many farmers, a matter as important to them as the improvement of the grading system in itself. Undoubtedly producers appreciate the splendid work done by the Federal Department of Agriculture, and particularly the introduction of the present system of hog grading as an integral part of the programme for developing a national hog policy. Experts in the Federal Department of Agriculture are quite cognisant of the need of improving the swine industry by establishing grades and encouraging the production of the right types. Western farmers who take an intelligent interest in the livestock industry are grateful for the exceptional work done by the permanent officials of the Department of Agriculture at Ottawa. It is not likely that the farmers as a whole would be inclined to make radical changes in the present system of grading, without being very sure that the methods introduced would justify themselves. Producers will probably be satisfied with supporting, and securing gradual improvements in the proposed grading regulations of the Dominion Livestock Branch. These regulations provide for the marking of all hogs by shippers or drovers, thus making it possible for the department to return the hog grading information direct to the farmer who produced the hogs. Under this plan the shipper or drouver will be required to take out a hog shipper's manifest, indicating the name of the farmer, the number of hogs shipped and the mark. It is also provided that where the drouver or shipper will undertake grading at the local shipping points, marking will not be necessary. The local shipper will be required to take out a shipper's hog manifest, which will indicate the farmer's name, number of hogs shipped and the grading. Carloads of these hogs will be graded by the official grader at their destination, so that unofficial grading will be checked up for accuracy. When shippers cannot or do not grade in accordance with official regulations they will be required to mark their hogs as provided for above. These regulations are contained in the following section and clauses:

11. (a) All hogs offered for grading shall be marked in a manner approved by the Minister. A specific mark of identity shall be placed on each farmer's lot of hogs, in each and every car lot, truck load or other shipment when two or more lots of farmers' hogs are marketed together. A shipper's manifest showing the name of the farmer and the number of hogs shipped and their mark shall be made out by the shipper or drover. This manifest shall be presented to the hog grader at the stockyards or abattoir to which the hogs are shipped.

(b) Provided that when or where hogs are graded locally in accordance with official grading by the drover or shipper marking of hogs will not be required when settlement is made to the farmer on the basis of official grades, and the shipper's grading manifest is made out showing the farmer's name, number of hogs sold, and the grading of each farmer's lot. The shipper's grading manifest shall be presented to the hog grader at the stockyard or abattoir to which the hogs are shipped.

In the May conference, 1927, at which the premium reduction was effected, the following resolution was passed: "that on request, grading and weight on the hooks be provided, and that arrangements for this be made by the Dominion Livestock Branch." If it were possible to work this out in a practical way along with an improved grading system for live animals, farmers might be provided with a check on the actual grading which ultimately determines the class of bacon placed on the market. Undoubtedly, thick smooth hogs have been used by the packers to manufacture domestic bacon, although in some brands a higher select bacon is made than in others. It should also be observed that Mr. L. C. McQuat, bacon specialist in charge of hog grading standards in the Dominion, checks carloads of hogs which have been graded alive by the official graders. So far as information is available, results of this checking have not been placed before the farming community.

It is necessary once more to emphasise the necessity of volume of production, particularly with respect to bacon and butter, if Canada desires to secure the best results in the British market. On the surface it may appear that a small production means a high price; but it will be recalled that in Great Britain Canada is competing with producing countries throughout the world; and that British traders tend naturally to turn to those countries that can guarantee uniformity in the delivery of agricultural products. It was made quite clear while discussing this question with prominent traders in the London market, that uncertainty with respect to Canadian supplies both injured the market and discouraged the men who had associated themselves with the marketing of Canadian products. To place a new brand, or a new product on the British market is not the work of a day. It requires months and even years to create a clientele, and then it must be assured a constant supply of the commodity. The Danes have seized upon this fact and notwithstanding economic difficulties have maintained volume in the bacon trade, while Canada has curtailed its shipments. Turning from the British market even for a comparatively brief period gives competitors the opportunity to take over customers who may be lost for all time. It is idle to criticise the Canadian farmer for failure to recognise that fact, and to throw into sharp relief his propensity for dropping a line of production that for a certain time may not yield profits. As has been mentioned elsewhere, Canadian packers have adopted precisely the same policy, and it is essential that they, along with the farmers, should

combine to market under the lowest possible costs. Farmers and packers alike have taken heavy losses, and these have had an important bearing upon the holding of the British bacon trade. Undoubtedly the amalgamation of the packing concerns has been a step in the right direction, inasmuch as it makes possible the achieving of economies both on the side of production and of marketing. Savings so effected should be distributed over the entire industry, including primary producers. Only on the basis of profitable production can farmers continue to bring forward raw materials for the manufacturers. It remains for the farmers to work out a comprehensive marketing scheme that will secure equally desirable results for primary producers. As has been well stated by Mr. John P. Burns, no manufacturer or business man can escape the necessity of averaging profits and losses over a period of years. It may require a considerable period of time before it can be definitely determined whether the production of the product for a particular market is worth while.

Denmark has achieved success on the whole, but has also taken heavy losses, particularly in the war years and during the past two years. It is scarcely necessary to repeat that the success of Danish farmers has been the direct result of co-operation, industry and common sense. Their programme has included the production of a special breed of hogs, and the laying down of stringent rules regarding grading and cure. True, the proximity of Denmark to Great Britain gives Danish farmers an advantage with respect to the length of time and cure which they give their bacon; but this is largely offset by the fact that they must import feeds at a high cost. This is where the Canadian producer has a distinct advantage.

The form in which the British market will take our pork covers, as has been stated in detail elsewhere, Cumberland Cuts, Long Cut Hams and Wiltshire Sides. Western packers have achieved considerable success in furnishing that market with Cumberlands and Long Cut Hams, while Eastern packers have shipped Wiltshires, which have steadily increased in quality, steadily reducing also the premium paid the Danish product over the Canadian. In the West, the lack of hogs of the proper quality and sufficient quantity has not made the manufacture of Wiltshire sides worth while. Messrs. P. Burns & Company, Calgary, have done much to find an outlet for Western pork in the British market. This company maintains its own offices in London and Liverpool, with men in charge who have made a life study of the British food trade. An intensive study has been made by this concern of the British preference for quality, style of cut, selection, cure, package and shipping conditions. Its products, chiefly Cumberlands, have secured a substantial premium over those of United States packers. The company has not entered the Wiltshire trade, due to the lack of essential raw materials for the manufacture of this product.

Western Canada has during recent years accomplished a great deal by way of bringing hogs up to the bacon type standard. Hog production is more successful and more general in the dairying districts, but is not by any means confined to those districts. The principal feeds utilised are oats and barley, of which all the prairie provinces can

produce an abundance. The hogs are usually out on the pasture until the advent of severe weather. As has been explained elsewhere, the majority of Western farmers raise only one litter of pigs a year, usually in April or May, causing the market supply to reach its peak in the following January. Undoubtedly, there are difficulties, owing to the climate, in raising fall litters, due to the careful attention that must be given to the pigs during the winter months. Nevertheless, an increase in fall litters would prove of enormous advantage to the industry. An essential factor in holding down production costs at the packing plants is the securing of uniform supplies throughout the year. Under present conditions, profitable packing is essential in maintaining buying power at central markets in the West.

The marketing of hogs on central livestock markets is advisable, from the farmers' standpoint. This helps to stabilise and maintain prices, due to the fact that Eastern packers have accommodation at Western stockyards which enables them to purchase hogs in competition with local packers. The practice of selling hogs to packers on country weights and grades, on the basis of prevailing central market prices, enables packers to obtain a percentage of their weekly requirements outside the market, and to that extent diminishes the demand at the central markets. This practice undoubtedly makes it more difficult for any farmers' organisation to maintain prices at central markets, upon which it is dependent for the absorption of supplies.

With respect to the possibility of establishing co-operative packing plants in Saskatchewan along the Danish or British models it is clear that many difficulties lie in the way of immediate action. The first of these is the absence of volume and regularity of hog production. Dominion statistics covering 1926 show that 278,000 hogs were sent to market by the producers of Saskatchewan. These hogs were distributed among the Moose Jaw, Regina and Prince Albert packing plants, while a large proportion was exported to packing plants in Manitoba and Eastern Canada. The Moose Jaw packing plant alone could absorb the entire supply. It is evident, then, that Saskatchewan already has an excess capacity of packing facilities, and it should be borne in mind that, in the long run, the industry as a whole must bear the costs of under-production. It is quite clear that operation of available packing plants to capacity would tend to strengthen prices at all provincial markets. If it were possible to materially reduce costs of operation at these plants, encouragement would be given to the packers to enter the markets with an increased demand for all hog supplies. It should also be borne in mind that domestic and export conditions are reversed, with respect to comparative conditions in Canada and Denmark. In the latter country approximately 85 per cent. of the product is exported, while in Canada the domestic market absorbs by far the bulk of pork production. It should also be kept in mind that the present packing establishments have wide and intricate trade relationships built upon the experience of many years, and have at their command cost data and other essential production facts which permit them to operate on the best possible basis. Moreover, very large sums of money have been invested in plant and machinery, and it is surely

evident that the closing down of these plants would inflict heavy losses not only upon the packers but upon the people of the province. On the other hand, the time may come when such packing facilities will be bought and placed under the control of a farmers' organisation designed for that purpose. Whether that be eventually the policy of producers, it is quite clear that the most urgent and pressing problem for them under present conditions is the perfecting of the marketing organisation at their disposal. Packing has been possible in Denmark because the farmers are small scale producers, operating the farms primarily on a dairying basis. Under those conditions they could guarantee uniformity and volume of pig production. In Western Canada, field crop production remains the most important enterprise. Assuredly, volume must be guaranteed before any local co-operative packing plant can expect any measure of success.

It is well to be perfectly clear on the fact that there are no inherent difficulties which cannot be overcome in launching co-operative packing plants in Western Canada. True, as stated elsewhere, the experience of the United States in this respect is not encouraging, but in that country the co-operative packing organisations were not constructed on a strictly co-operative basis. According to information received from Mr. C. V. Whalin, chief in charge of marketing livestock, U.S. Department of Agriculture, a survey of co-operative packing plants and municipal abattoirs in the United States was made during the years 1919 and 1920. At that time there were some five co-operative meat packing plants in operation, but these have since discontinued business, either through receiverships or bankruptcy. The reasons offered for their failure were inexperience, insufficient working capital, poor management, and a plant investment out of proportion to the amount of business available in a limited territory in which to market perishable products. Mr. Whalin states that during the past two or three years several plants that were constructed by co-operative associations have been purchased by large private packing concerns, and are now being operated by them. Mr. Whalin states further that to his knowledge no co-operative meat packing plants are now in existence in the United States. However, as stated in more detail elsewhere, these plants were not organised on a genuinely co-operative foundation.

In looking to the future, it may be suggested that steps should be taken to secure more definite information with respect to the livestock holdings of the various districts of the province, than is now available. It might be well to consider building an experimental co-operative packing plant at a central point in some district, where the transportation facilities are adequate for deliveries. In the meantime deductions should be continued along the lines of the present contract now in force in the provincial livestock organisation. It should be carefully considered whether such deductions should be applied to the credit of the various districts, until sufficient funds were available for the building of an experimental bacon factory within one or more districts. Construction should not be attempted until at least 50 per cent. of all the hogs in the district are under contract, and until it has been definitely determined what the monthly run should amount to before the

local killing plant could be placed on a profitable basis. By co-operation between the federal and provincial authorities, and the farmers' organisation itself, an exhaustive census could be taken within each local district for the purpose of definitely determining the nature and extent of livestock holdings. The above mentioned plan of financing is an improvement, it is believed, over the plan followed in Denmark, because it eliminates the necessity of borrowing capital required for plant construction, which under the Danish scheme necessitates joint and several liability. As this aspect of the Danish programme has been considered in detail elsewhere, it is not necessary to do more than refer briefly to it at this point.

Moreover, at such experimental plants hogs should be separated from other livestock as far as actual processing is concerned. Neither in Denmark nor in England are the bacon factories equipped to kill cattle on a large scale. They do kill a few head, chiefly calves, and these for the purpose of manufacturing sausage. The processing of cattle requires an elaborate plant, while the equipment for processing hogs is more simple. If the experiment should prove a success, additional plants could be built as conditions warranted. Finally, this would demand the establishment of a central plant in the province, provided with ample storing and smoking facilities, to which the local plants could ship their unfinished materials. A further stage in the process, as business warranted, would be the construction of a smoking and storing plant in London, and the provision of distributing facilities. This London plant should be erected and controlled by the farmers' organisations of the three prairie provinces, and placed on the basis of a central selling agency. In time, the plant at London could also handle butter and eggs, as is now done by the Danish Bacon and Trading Company. Under a scheme of this kind, if finally developed, all local killing plants would deliver their products and sell them through the central agency at London. It is felt that the plan outlined above would be feasible only on the condition that producers, in each district, would and could guarantee the necessary volume of raw materials. In the meantime, it is the part of wisdom to concentrate on the marketing aspect of the livestock problem.

By establishing packing plants the Danish farmers have been able to carry the marketing of pork products right up to the wholesale stage, and even to some extent, to the retail stage. They have either created their own storage and final processing facilities, or sell to British agents who have such facilities. Under this system, while it might be possible to hold back raw materials at the farm, or products placed in storage, direct study of the problem both in Denmark and London made it clear that supplies go forward to the British market in a regular and fairly uniform manner. Theoretically, the Danish system permits merchandising, as an alternative to dumping, but actually the product flows to market even when that market is depressed. Obviously, when supplies can be secured elsewhere, it is impossible for producers organised even as highly as are the Danes, to control market price by holding off supplies. Also, the system of production on the farm, based upon volume as well as quality, requires a steady

movement of supplies through the packing plants to ultimate markets. *Only in the case of packaged goods was there evidence of holding pork products off the market for better prices.* Those who have made a careful study of co-operative marketing realise that it involves not merely selling, but as far as possible improving production, improving the mechanism of mobilising supplies, of creating and improving storage facilities, and of distributing the product to the best advantage in the market. In the effort to prevent dumping, it should not be forgotten that mere control of the supply will not overcome this difficulty, except in the sense that supplies may come forward more regularly and over a longer period of time to meet actual market demand. Nevertheless, although the Danish farmers have taken heavy losses under the conditions which have been analysed in detail elsewhere, their very solidarity, their wonderful organisation, their efficient selling system, their application of science to production on the farm and in the factory have aided them in holding losses to a minimum. It is in this sense that it is desirable to secure more orderly marketing for Western livestock. Undoubtedly, a great deal can be done both by improving production on the farm, by creating feeding facilities at strategic points, by giving farmers more definite information with respect to the market, and by controlling supplies at the centre, to introduce a system of orderly marketing for the benefit of those men, the producers, whose activities underlie and support the entire livestock industry. It is, therefore, vital so to develop and improve the livestock marketing organisation, that it will function not merely as a commission house, but will also be a powerful instrument in the hands of primary producers to give them the greatest possible control over the product of their industry.



An English Beauty Spot—The Coast of North Devon at Ilfracombe.

The Recommendations

- (1) Co-operative Marketing of Livestock.
 - (2) Co-operative Bacon Factories.
 - (3) Feeding Stations.
 - (4) Pig Testing Stations.
 - (5) Better Breeding.
 - (6) Grades for Export Livestock.
 - (7) Bureau of Agricultural Economics.
 - (8) Overseas Agricultural Representation.
-

(1) CO-OPERATIVE MARKETING OF LIVESTOCK.

RECOMMENDATION.

Throughout our studies we have constantly had before us the co-operative movement as related to the marketing of farm produce. We have arrived at the conclusion that the organised marketing of livestock through co-operative associations affords a means of providing a better service to the producer at the initial point of loading. In addition, a greater uniformity in the shipments is secured: the shipper has also a better command over the ultimate marketing of his livestock. It is possible for co-operative marketing associations to make direct shipments of feeder stock to the Old Country and United States markets, and it would appear to us that greater stability is given to the livestock industry as marketing through such associations is placed on a long term contract basis.

In the opinion of this Commission, such a system of marketing should be a powerful factor in controlling undue speculation in the product of primary producers. This product has heretofore passed through too many hands in its movement from the primary producer to the export terminal.

WE, THEREFORE COMMEND this method of marketing to the livestock producers of Saskatchewan.

(2) CO-OPERATIVE BACON FACTORIES.

RECOMMENDATION.

Our study of co-operative bacon factories in Denmark and England has confirmed our opinion that, under given conditions, producers can successfully operate a co-operative bacon factory. Due consideration has been given to conditions as they exist today, viz.:

- (a) The type of hog produced;
- (b) The scattered areas from which our hogs are drawn;
- (c) Climatic conditions;

(d) Few large centres where by-products in large quantities may be consumed.

Inasmuch as the Saskatchewan Livestock Co-operative Marketing Association, Ltd., has made provision in Section 7, Clause (c) of the producer's contract for deductions to cover the building of abattoirs, packing plants, etc., this Commission RECOMMENDS that before any action is taken a complete survey be made of the livestock holdings in specified areas of the province with a view to discovering the most suitable area in which to construct an experimental packing plant. Among the determining factors in selecting the location, should be volume of production, regularity of delivery and quality of the product, these being essential not only for success in operating, but also for giving reasonable assurance that the finished product can be profitably marketed.

We further recommend that only on the basis of actual experience and profitable operation should the producer enter the field of processing on a large scale.

Our recommendation, as a result of our investigation, is that an intensive campaign should be conducted by the Provincial Government, educational bodies and by breeders' marketing associations, to the end that an approved type of hog will be forthcoming; that continuity of supply may be depended upon, and that the producer may gradually familiarise himself with the demands which would be made upon him should co-operative bacon factories materialise. We believe that such factories could, eventually, be beneficial to Saskatchewan, but we also believe that our hog producers should be given an opportunity of studying this subject from all angles before active steps are taken for the establishment of such factories.

(3)

FEEDING STATIONS.

RECOMMENDATION.

Gluts on the market are frequently the result of unloading cars of livestock in an unfinished condition;

AND WHEREAS, the reasons for such an unfortunate situation are usually due to shortage of feed and other contingencies and factors beyond the control of the farmer;

THEREFORE, this Commission RECOMMENDS the advisability of establishing at strategic points as close as possible to central markets, or to localities where feed is readily available, feeding stations where such livestock might be held and properly finished until the central markets can profitably absorb them.

Further, we are of the opinion that the problem of financing such feeding stations can be best undertaken by the Saskatchewan Livestock Co-operative Marketing Association.

(4) PIG TESTING STATIONS AND THE MARKETING OF BREEDING STOCK.**RECOMMENDATION.**

WHEREAS, breeding stock used on Danish farms is invariably obtained direct from breeding centres;

AND WHEREAS, pigs from breeding centres are furnished to the testing stations for the purpose of recording type, prolificacy and responsiveness to feeding;

AND WHEREAS, the connecting up of the breeding centre with the commercial farmer through the medium of testing stations is responsible for the development of a national type of pig in Denmark;

WE RECOMMEND that some similar system which would connect our breeders of purebred swine with Western Canadian commercial farmers, to a greater extent than exists at present, should be instituted.

(5)**BETTER BREEDING.****RECOMMENDATION.**

In view of the efforts being made in Ireland, the Argentine and elsewhere to produce high grade commercial livestock by using purebred sires of outstanding type, purchased in England and Scotland, and the remarkable achievements attained by producers who have followed this policy, as seen by the quality of their products on the Smithfield and other markets, this Commission believes that every effort should be made to procure high grade sires of the right type from England and Scotland to improve beef cattle quality in Saskatchewan.

This Commission THEREFORE RECOMMENDS that the Trustees request the Provincial Government to consider ways and means whereby this may best be accomplished.

(6)**GRADES FOR EXPORT LIVESTOCK.****RECOMMENDATION.**

In view of the high cost of transportation of livestock to Great Britain the necessity therefore arises of relating high rates to high values. In view of the fact also that the export of cattle of an undesirable type is economically unsound;

AND WHEREAS, Scotch and English feeders demand store cattle of outstanding merit, and having observed in some of the countries visited export agricultural products are under strict control with respect to quality and type, this Commission is of the opinion and hereby RECOMMENDS that some measure of grading for the overseas export livestock trade be instituted under Dominion auspices.

(7) BUREAU OF AGRICULTURAL ECONOMICS.**RECOMMENDATION.**

This Commission goes on record as fully appreciating the exceptional work done by the permanent officials in the Federal Livestock Department; and further wishes to record its appreciation of the enlightened policies that have been applied in the development of this basic industry.

Our studies in Denmark, however, suggested to us that a need exists in Canada for the erection of a Department or Bureau, the special work of which would be to conduct studies in marketing research, in order that data would be readily available to the agricultural industry of the Dominion.

The Commission respectfully requests the Provincial Government to submit to the Minister of Agriculture, Ottawa, the following recommendation:

THAT in the opinion of the Saskatchewan Overseas Livestock Marketing Commission, it has become essential to add to the activities of the Department of Agriculture, Ottawa, research in agricultural economics; and that for this purpose the department establish a Bureau of Agricultural Economics to give the same advanced service in this field as has been given to producers in other branches of the agricultural industry.

(8) OVERSEAS REPRESENTATION FOR AGRICULTURE.**RECOMMENDATION.**

While the main object of the Commission was a study of livestock marketing and co-operative bacon factories, we naturally came in contact with numerous marketing agencies, as well as government officials, in the countries visited. Especially were we struck with the valuable work for Canadian agriculture that is being carried on by Mr. W. A. Wilson, Agricultural Products Representative, with headquarters in the Canadian Building, London.

The Commission is of the opinion that the appointment of a special officer in the United Kingdom has been fully justified, and that there is an opportunity for a further useful development of this policy. Since matters pertaining to the production of agricultural products, and the grading and standardisation of all farm commodities are supervised by the Dominion Department of Agriculture, and while matters pertaining to marketing generally are usually directed to the Department of Trade and Commerce, the Commission respectfully suggests that these two activities should be brought into closer harmony, but without sacrificing in any way the service which the special Agricultural Products Representative is now giving.

That an industry which means so much to Canada should be specially represented in the heart of the Empire is very desirable, but from what we could see of the enormous amount of work this representative has to cope with, single handed, he is handicapped, and we came away with the impression that many opportunities for promoting the welfare of Canadian agriculture are lost owing to lack of assistance. We realised that so many questions have to be dealt with in connection with our agricultural export trade, the Empire Marketing Board, Research, Tariffs and Transportation, that only an agriculturist of wide experience can be held responsible.

As a Saskatchewan Commission, we would like to express our appreciation of what has already been accomplished by the Dominion Department of Agriculture through its overseas representative. We have no hesitation in emphatically expressing the opinion that in consideration of the immensity and importance of the agricultural industry and ever increasing competition, special and adequate overseas representation should be provided. We would respectfully suggest that Mr. Wilson be granted further assistance so that regular visits to the Canadian Trade Commissioners stationed in the British Isles, Scotland, Northern Ireland, the Irish Free State, France, Germany and other European countries might be made, thus establishing a valuable point of contact with the agricultural products representative. An assistant would be able to discuss matters relating especially to agricultural exports with which our trade commissioners are often faced. We believe if our suggestions were acted upon, there would be closer cohesion between the Department of Trade and Commerce and the agricultural industry in so far as our export trade is concerned, and we are of the opinion that Canadian trade commissioners, who are doing excellent work and are devoted to the development of overseas business, would appreciate the fact that agricultural experts were available with whom they could consult. Further, we came to the conclusion that periodic visits to Canada once every year should be made by the Agricultural Products Representative or one of his assistants as it is vitally essential that the London office should keep in constant touch with Canadian marketing activities, and in order that officials, business houses and producers' organisations interested in standards and grades suitable for the overseas trade may be consulted.

THEREFORE, it is the unanimous desire of the Commission that the Trustees present the following resolution to the Provincial Government for transmission to the Minister of Agriculture at Ottawa:

After careful consideration and study of the problems of marketing of the agricultural products, not only of Saskatchewan but of the other provinces, in the British market, it is our opinion:

- (1) That the Agricultural Products Representative in London, England, should be afforded adequate assistance and proper office and other facilities for the carrying on of his work;
- (2) That he should remain under the control of the Department of Agriculture;

- (3) That he and his staff should be given instructions to render all possible assistance to the Canadian Trade Commissioners, for aiding them in marketing agricultural products;
- (4) That the title of "Agricultural Products Representative" could quite appropriately be changed to that of "Agricultural Products Commissioner," thereby raising the status of this officer and enabling him more effectively to discharge his official duties.

All of which, with our unanimous approval, is most respectfully submitted.

W. W. SWANSON, *Chairman.*

EDW. EVANS.

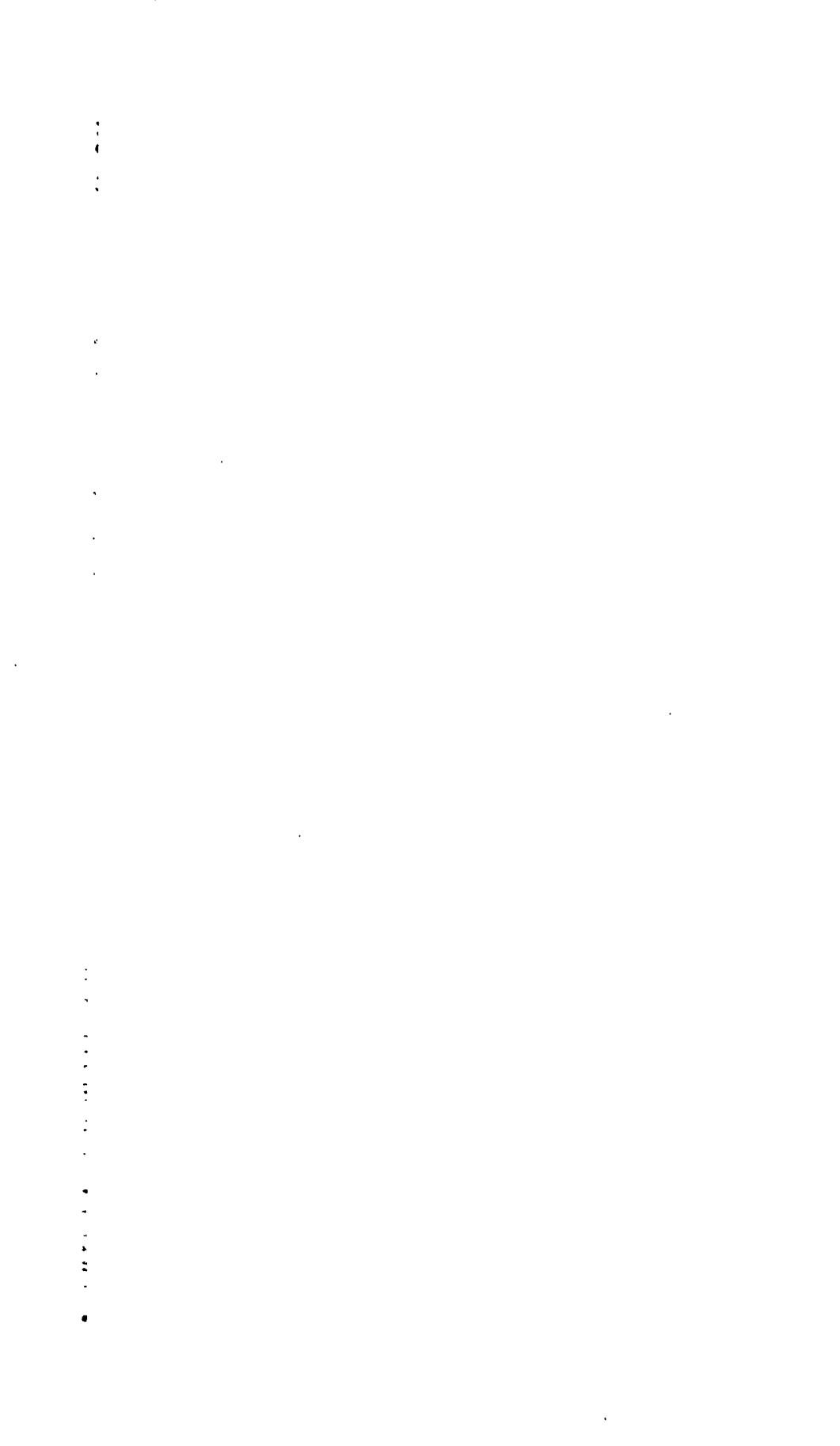
P. J. HOFFMAN,

R. A. WRIGGHT.

W. WALDRON, *Secretary.*

Regina, Saskatchewan,

January 20, 1928.



Appendices to Report

INDEX TO APPENDICES.

Appendix No.		Page No.
1.	Bibliography, Part I.	413
	Bibliography, Part II.	416
2.	Money, Temperature, Measure and Weight Equivalents	418
3.	Plans for Bacon Factory, prepared by Messrs. Nicolaisen & Kruse	418A
4.	Estimates furnished by Messrs. Nicolaisen & Kruse, Part I.	419
	Estimates furnished by Messrs. Nicolaisen & Kruse, Part II.	420
5.	Chart on Cattle Byproducts	420A
6.	Four Charts on Cattle Prices, Chicago	420B-420E
7.	Chart—W. Weddel & Co.	420F
8.	Chart—R. H. Thomson & Co.	420G
	Insert of Danish Poultry Farm Scenes	421
9.	Synopsis of Co-operative Marketing Associations Act of Saskatchewan.	422

APPENDIX I.

BIBLIOGRAPHY—PART ONE.

The following books, pamphlets and articles have been more or less consulted in preparing this report. The list is not complete, but it covers the chief sources from which materials have been drawn. We wish gratefully to acknowledge help secured from these books and documents.

AGRICULTURAL CO-OPERATION IN DENMARK. *Chris. L. Christensen*, U.S.D.A. Bulletin, No. 1266.

SWINE HUSBANDRY IN THE UNITED KINGDOM AND DENMARK. Department of Agriculture, Ottawa, 1910.

A SHORT SURVEY OF DANISH AGRICULTURE. The Royal Danish Agricultural Society, Copenhagen, 1913.

CO-OPERATION IN DANISH AGRICULTURE. *Harold Faber*. London, 1918.

OFFICIAL CENSUS. Denmark's Statistical Department, Copenhagen.

DENMARK, 1924-1926. Published by the Danish Ministry for Foreign Affairs and the Danish Statistical Department.

DENMARK: A CO-OPERATIVE COMMONWEALTH. *F. C. Howe*, New York, 1921.

CO-OPERATION IN DENMARK. *L. Smith-Gordon*, London, 1922.

DANISH FOREIGN OFFICIAL JOURNAL. Copenhagen, 1926, 1927.

PUBLIC ADMINISTRATION. Vol. 5, No. 1. This contains articles on Danish Agriculture by *M. Madsen-Mygdal*; Danish Social Legislation, by *S. Neumann*; Danish Schools and School Administration, by *H. Bertelsen*. London, 1927.

Mimeographed Materials on Production Cost in Denmark. Professor *O. H. Larsen*, Royal Danish Agricultural College, Copenhagen, 1926.

FARM LIFE IN DENMARK. *E. C. Branson*. London, 1926.

REPORT ON THE ECONOMIC SITUATION IN DENMARK. Department of Overseas Trade, 1925.

AGRICULTURAL COSTINGS IN SWITZERLAND AND DENMARK. *A. G. Ruston*, Agricultural Department, Leeds University. Journal of the Ministry of Agriculture, August, 1926.

PIG TESTING AND RECORDING. *H. R. Davidson*, M.A. and *A. D. Buchanan Smith*, M.A. The Pig Breeders' Annual, 1927-1928.

Articles by *Joseph K. Hart* on the People's High Schools. THE SURVEY, April, June, September, 1926.

SOCIAL LEGISLATION IN DENMARK. *F. Zeuthen*. Published by the Danish Ministry of Social Affairs. June, 1924.

AGRICULTURE IN SCANIA, SWEDEN. *Sir A. D. Hall*. Journal of Ministry of Agriculture. London, August, 1923.

THE POLISH HANDBOOK. Edited by *F. B. Czarnomski*. London, 1925.

POLAND'S ECONOMIC DEVELOPMENT. A Short Sketch. *F. Buyak*. London.

POLAND, OLD AND NEW. *Roman Dyboski*. London, 1926.

AGRICULTURE IN POLAND. *S. Krolikowski*. Ministry of Agriculture and State Domains. Warsaw, 1925.

POLISH ECONOMIST. Warsaw, 1926, 1927.

POZNANIAN AGRICULTURE. International Congress of Agriculture. Warsaw, 1925.

THE LONDON TIMES. Trade and Engineering Supplement. Poland Section. London, 1926.

REPORT ON INDUSTRIAL, COMMERCIAL AND ECONOMIC SITUATION IN POLAND. Department of Overseas Trade. London, 1925.

LATVIA AND RUSSIA. *A. Berg*. London, 1920.

LATVIA'S ECONOMIC LIFE. *Percy Meyer*. Riga, 1925.

BREEDING OF CATTLE IN LATVIA. Mimeographed materials provided by Ministry of Agriculture. Riga, 1927.

- REPORT, Central Union of Latvian Co-operative Dairy Societies. Riga, 1926.
- LATVIA'S NATIONAL LIFE. Riga, 1926.
- BANK OF LATVIA. Riga, 1925.
- THE ESTHONIAN YEAR BOOK. Edited by A. Pullerits. Tallinn, 1927.
- LITHUANIA: PAST AND PRESENT. E. J. Harrison. London.
- ECONOMIC AND FINANCIAL SITUATION OF LITHUANIA. Kovno, 1924.
- LITHUANIA: A REVIEW. E. J. Harrison. London.
- ECONOMY AND CO-OPERATION IN LITHUANIA. Kovno.
- GUIDE TO THE SOVIET UNION. Moscow, 1926.
- WEEKLY NEWS BULLETIN. Society for Cultural Relations with Foreign Countries, Moscow, 1927.
- THE STATE BANK OF THE U.S.S.R., 1921-1926. Moscow.
- THE SOVIET UNION MONTHLY. London, 1927.
- SIERRA BUTTER IN FOREIGN MARKETS. Selosoyus, Limited. London, 1926.
- POPULATION AND NATURAL RESOURCES. International Economic Conference. Geneva, 1927.
- Irish Free State. TRADE AND SHIPPING STATISTICS. December, 1925.
- GUIDE TO THE LIVESTOCK BREEDING ACT, 1925.
- Government Bulletins on Registration of Purebred Cattle. Government of Northern Ireland. Ministry of Agriculture Reports on Registration of Purebred Dairy Cattle, Swine, etc.
- Bulletins on Breeding and Feeding, etc., in Irish Free State.
- YEAR BOOK OF AGRICULTURAL CO-OPERATION IN THE BRITISH EMPIRE. Edited by the Horace Plunkett Foundation. London, 1926.
- THE SURVEY. New York, November, 1921. Articles on Ireland by Sir Horace Plunkett, Lionel Smith-Gordon and others.
- DENMARK AND IRELAND: SOME FACTS FOR THE IRISH FARMER. F. J. Geary. Dublin, Irish Independent, 1925.
- COMMERCIAL INTELLIGENCE JOURNAL. March 5, 12, 19, 1927. Articles by Major G. B. Johnson on Canadian Cattle Industry.
- AGRICULTURAL RESEARCH IN 1925. Royal Agricultural Society of England. London, 1926.
- RESEARCH AND THE LAND: AN ACCOUNT OF RECENT PROGRESS IN AGRICULTURAL AND HORTICULTURAL SCIENCE IN THE UNITED KINGDOM. V. E. Wilkins, B.Sc. London, 1926.
- REPORT OF THE DEVELOPMENT COMMISSIONERS. Vol. 16, 1926. London, 1926.
- THE INTERNATIONAL INSTITUTE OF AGRICULTURE. General Policies and Activities. Rome, 1926.
- ANNUAL STATEMENT OF THE TRADE OF THE U.K. WITH FOREIGN COUNTRIES AND BRITISH POSSESSIONS, 1925. London, 1926. 4 Vols.
- METHODS AND PRACTICES OF RETAILING MEAT, U.S.D.A. Bulletin 1441. Washington, 1926.
- TO PROMOTE CO-OPERATIVE MARKETING. Hearings Before the Committee on Agriculture and Forestry on S. 1910 and H.R. 7893. Washington, 1926.
- THE MARKETING OF FARM PRODUCTS. PART I, LIVESTOCK. P. J. Prewett, Agricultural Economics Research Institute, Oxford University. Oxford, 1926.
- TRANSPORTATION COSTS AND COSTS OF PRODUCTION. U.S. Tariff Commission. Washington, 1926.
- THE FARMER'S STANDARD OF LIVING. U.S.D.A. Bulletin 1466. Washington, 1926.
- New Zealand Dairy Produce Control Board. CIRCULARS. Wellington, N.Z. 1924-1926. (Mimeo.) New Zealand Meat Producers Board. Annual Reports.
- MODERN SWINE HUSBANDRY. Rt. Hon. Lord Bledisloe. Journal of the Farmers' Club. December, 1926.
- BREEDING AND FEEDING THE MARKET HOG. G. R. Rothwell, B.S.A. Ottawa, 1926. Dominion Department Agriculture. Bulletin No. 74, New Series.
- SHIPPING CATTLE TO BRITAIN. Department of Agriculture. Bulletin No. 62. New Series.
- THE BACON HOG: BREEDING, GROWING AND FINISHING. W. Toole and R. G. Knox. Toronto, 1926. Ont. D. of A. Bulletin, No. 320.

- BREEDING AND IMPROVEMENT OF FARM ANIMALS. *V. A. Rice*, Mass. Agricultural College. New York, 1926.
- CASE FOR WORLD WAR ON FOOT-AND-MOUTH DISEASE. *J. J. Keevil*. London, 1926.
- American National Livestock Association. Proceedings at Phoenix, Arizona, 1926.
- AGRICULTURAL PROBLEMS IN THEIR INTERNATIONAL ASPECT. International Institute of Agriculture. Rome, 1926.
- THE NATIONAL FARMERS' UNION YEAR BOOK, 1927. London, 1927.
- NATIONAL ASSOCIATION OF MARKETING OFFICIALS. Proceedings Vol. 8, 1926.
- WESTERN CANADA LIVESTOCK UNION. Annual Reports.
- OFFICIAL YEAR BOOK OF THE COMMONWEALTH OF AUSTRALIA, Melbourne, 1926.
- THE STORY OF THE RANGE. *W. C. Barnes*, Washington, 1926.
- THE MEAT INDUSTRY. *H. B. Gronshaw and D. J. Anthony*. London, 1927.
- ESTIMATED CONSUMPTION OF MEAT, DAIRY PRODUCTS, POULTRY AND EGGS IN CANADA, 1922-1925. Dominion Bureau of Statistics. Ottawa, 1926. (Mimeo-graphed.)
- ECONOMIC HISTORY OF AMERICAN AGRICULTURE. *E. L. Bogart*. Toronto.
- AGRICULTURAL ORGANISATION IN THE UNITED STATES. *E. Wiest*. Lexington.
- PAPERS READ AT THE INTERNATIONAL CONGRESS OF CATTLE BREEDING. Scheveningen. Holland, 1923.
- MODEL RULES FOR AN AGRICULTURAL CREDIT SOCIETY. H.M.S. Office. London, 1923.
- COMMODITY PRICES IN THEIR RELATION TO TRANSPORTATION COSTS. Bureau of Railway Economics. Washington, 1923.
- REVIEW OF THE CHILLED AND FROZEN MEAT TRADE. *W. Weddel and Company, Ltd.* London, 1926.
- THE PACKING INDUSTRY. Lectures Given Under the Joint Auspices of the School of Commerce and Administration. University of Chicago and the Institute of American Meat Packers. Chicago.
- HANDBOOK ON THE BACON HOG AND HOG GRADING. *A. A. MacMillan*. Chief, Sheep and Swine Division. Ottawa.
- THE SOW AND HER LITTER. Contributed by the Department of Animal Husbandry, University of Saskatchewan, Saskatoon, 1922.
- SWINE HUSBANDRY IN CANADA. *J. B. Spencer, B.S.A.* Livestock Branch, Ottawa. May, 1924.
- ANNUAL REPORTS. Livestock Market and Trade Review. Ottawa.
- MANITOBA RATIONS FOR GROWING BACON PIGS. *G. W. Wood*. Manitoba Agricultural College.
- THE BACON HOG. BREEDING, GROWING AND FINISHING. *Professors Wade Toole and R. G. Knox*. Ontario Agricultural College.
- THE ORIGIN AND QUALITY OF COMMERCIAL LIVESTOCK MARKETED IN CANADA IN 1926. Ottawa.
- Toronto Globe. ANNUAL FINANCIAL SURVEY. Articles by J. S. McLean and H. S. Arkell.
- THE HOG MARKET SITUATION. An Analysis. United Livestock Growers. October, 1927.

BIBLIOGRAPHY—PART TWO.

The following documents, especially, should be cited, as they comprise material which was carefully studied and in part incorporated in the Report:

I—EXTENT OF GOVERNMENT SUPERVISION IN GRADING AND IN PROCESSING.

THE AMERICAN LIVESTOCK AND MEAT INDUSTRY. *R. A. Clemen.* Ronald Press Company, 1923. Chapter 15, page 317. The United States Federal Meat Inspection Service.

A description of the progress of the Better Beef campaign—News Letter of April 9, National Livestock and Meat Board.

FEDERAL SUPERVISION OF LIVESTOCK MARKETS. *Louis D. Hall.* Separate No. 809, from the Year Book of the D. of A., 1919.

THE INSPECTION STAMP AS A GUIDE TO WHOLESALE MEAT. United States Department of Agriculture Miscellaneous Circular No. 63, May, 1926.

THE MEAT INSPECTION SERVICE OF THE U.S. DEPARTMENT OF AGRICULTURE. *George Ditewig.* Separate No. 714 from the Year Book of the Department of Agriculture, 1916.

MARKET CLASSES AND GRADES OF LIVESTOCK. U.S. Department of Agriculture Bulletin No. 1360.

MARKET CLASSES AND GRADES OF MEAT. University of Illinois Agricultural Experiment Station Bulletin No. 147.

MARKET CLASSES AND GRADES OF DRESSED BEEF. United States Department of Agriculture Bulletin No. 1246.

OFFICIAL U.S. STANDARDS FOR GRADES OF CARCASS BEEF. Service and Regulatory Announcement No. 99.

COMMERCIAL CUTS OF MEAT. United States Department Circular, No. 300.

MEATS AND THE PRINCIPAL MEAT PRODUCTS. Food Inspection Decision No. 205.

RULES AND REGULATIONS GOVERNING THE INVESTIGATION AND CERTIFICATION OF CLASS, QUALITY (GRADE) AND CONDITIONS OF MEATS AND MEAT FOOD PRODUCTS. Service and Regulatory Announcement No. 98.

II—METHODS OF FINANCING THE LIVESTOCK INDUSTRY.

FINANCING THE LIVESTOCK INDUSTRY. *Larmer.* MacMillan, 1926.

BANK CREDIT AND AGRICULTURE. *Ivan C. Wright.* McGraw, Hill Company, 1922.

AMERICAN LIVESTOCK AND MEAT INDUSTRY. Chapter 23, Methods of Livestock Financing. *R. A. Clemen.*

III—METHODS OF MARKETING USED BY THE PACKERS.

A. General.

MARKETING FACTS ABOUT THE MEAT INDUSTRY. Reprint 1922. Swift & Company Year Book.

HOW WE MARKET OUR VARIOUS PRODUCTS. Page 22, 1922 Year Book.

MARKETING FANCY MEATS. Page 30, 1922, Swift & Company Year Book.

Centre-spread Map. Pages 28-29, 1927 Swift & Company Year Book.

LESSON VIII, ECONOMICS OF THE PACKING INDUSTRY, Part I, Marketing of Packing House Products in the United States.

LESSON IX, ECONOMICS OF THE PACKING INDUSTRY, Part I, Transportation of Meat Products.

DISTRIBUTION OF MEAT PRODUCTS *F. Edson White.* Lecture VIII, The Packing Industry.

BRANCH OFFICE MANAGEMENT. *A. T. Kearney.* No. 28, Sales Executive Series, American Management Association, 1926.

THE AMERICAN LIVESTOCK AND MEAT INDUSTRY. *R. A. Clemen*. Chapters 13 and 14, pages 269-300, The Growth of the American Meat Trade Abroad and Present Trends of the American Export Trade.

B. Foreign.

OVERCOMING EXPORT DIFFICULTIES. Page 21, 1924 Swift & Company Year Book.

AMERICA'S PLACE IN THE MEAT INDUSTRY. Page 18, 1925 Year Book.

SELLING IN FOREIGN LANDS. Page 37, 1927 Year Book.

RELATION BETWEEN PORK EXPORTS AND THE PRODUCTION AND PRICE OF HOGS. Study in Livestock Marketing.

LESSON III, ECONOMICS OF THE PACKING INDUSTRY, Part I, America's Place in the World Livestock and Meat Industry.

LESSON X, ECONOMICS OF THE PACKING INDUSTRY, Part I, Foreign Trade in Meat Products.

THE AMERICAN LIVESTOCK AND MEAT INDUSTRY. *R. A. Clemen*. Chapters 13 and 14, pages 269-300, The Growth of the American Meat Trade Abroad and Present Trends of the American Export Trade.

AMERICAN MEAT PRODUCTS IN EXPORT TRADE. Department of Commerce Trade Information Bulletin No. 333.

C. Produce.

OUR PRODUCE BUSINESS. Page 41, 1921 Swift & Company Year Book.

POULTRY, EGGS, BUTTER AND CHEESE. Page 46, 1922 Year Book.

CHICKENS—FROM FARM TO TABLE. Page 37, 1923 Year Book.

LONG DISTANCE MARKETING OF DAIRY AND POULTRY PRODUCTS. Page 39, 1924 Year Book.

BUTTER, EGGS AND POULTRY. Page 39, 1925 Year Book.

THE MEAT PACKER AS A DISTRIBUTOR OF DAIRY PRODUCTS. The World Dairy Congress, 1923. *L. D. H. Weld*.

A DIRECT ROAD TO MARKET FOR YOUR BUTTER, EGGS AND MILK. Swift & Company Booklet.

IV—HOW THE PACKERS FINANCE DISTRIBUTION.

THE PACKING INDUSTRY. *E. A. Cudahy, Jr.* Lecture VI, Financing the Packing Industry.

V—COST OF MARKETING.

A. Total Cost.

WHAT THE FARMER GETS. Page 43, 1925 Swift & Company Year Book.

HOW WE ARE HELPING TO SOLVE THE FARM PROBLEM. Page 26, 1927 Year Book.

B. Wholesale—Branch Houses.

THE COST OF LIVING IN THE DISTRICT OF COLUMBIA. *L. D. H. Weld*. Statement before a Sub-Committee of the Committee on the District of Columbia of the United States Senate, Thursday, August 7, 1919.

C. Retail.

RETAIL MARKETING OF MEAT. United States Department of Agriculture Bulletin No. 1317.

MARGINS AND EXPENSES ON PROFITS IN RETAILING MEATS. United States Department of Agriculture Bulletin No. 1442.

CONSUMERS' HABITS AND PREFERENCES IN THE PURCHASE AND CONSUMPTION OF MEAT. U.S. Department of Agriculture Bulletin No. 1443.

APPENDIX II.

MONEY, TEMPERATURE, MEASURE AND WEIGHT EQUIVALENTS.

MONEY EQUIVALENTS.

English—

£ s. d. denotes pounds, shillings and pence.

The par value in Canadian dollars for an English £ is \$4.86 $\frac{2}{3}$.

Danish—

A krone is worth 13.25 pence, or 26.28 cents at par value. There are 100 öre to the krone.

Dutch—

A guilder is worth 1s. 8d. or 12 to the £ sterling, or 40.29 cents.

Polish—

A gold zloty is worth, at par, 19.30 cents. It was stabilised in 1926 at 11.22 cents.

TEMPERATURE EQUIVALENTS.

Centigrade—To find the equivalent in Fahrenheit multiply the degrees in Centigrade by 1.8 and add 32.

MEASURE EQUIVALENTS.

Kilometre=100 metres or 3,280.8 feet.

Hectare=2.47 acres.

WEIGHT EQUIVALENTS.

Long hundred = 112 pounds.

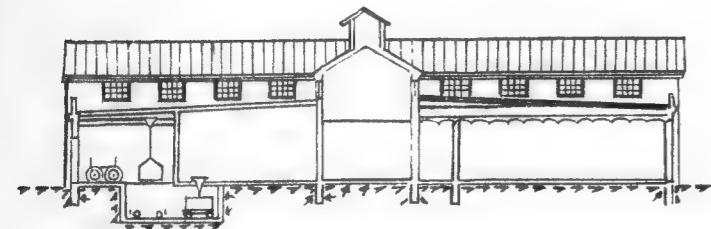
Kilogram = 2.2046 pounds.

Quintal = 100 kilograms or 220.46 pounds.

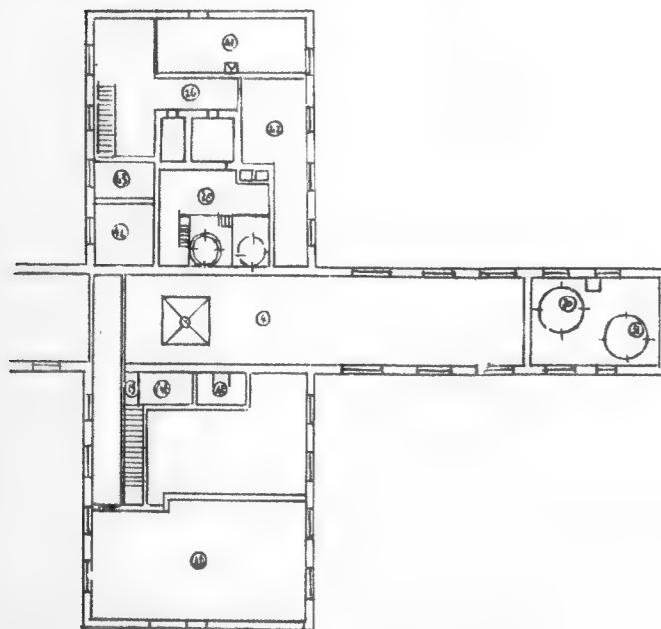
Metric ton = 1,000 kilograms or 2,204.6 pounds.

* Maistas * Erste Litauische Export-Schlacht- und Kuhhaus ~ 19 * Projekt eines Export Schweineschlachterei *

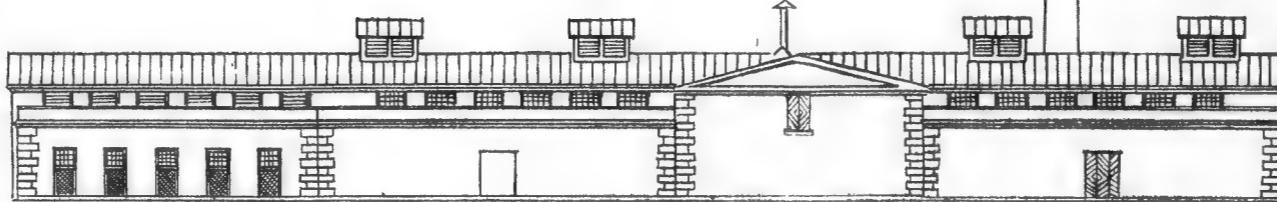
Cross Section



First floor plan



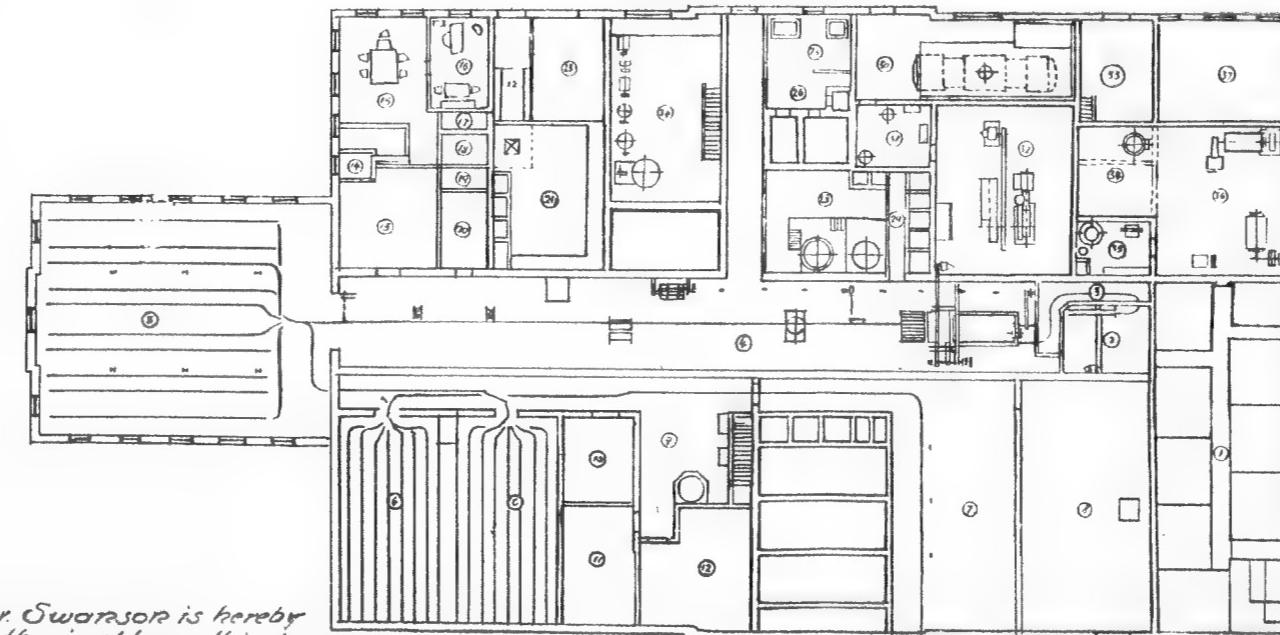
Front view



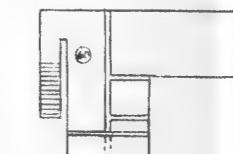
Side view



Ground floor plan



Basement plan



Dr. Swanson is hereby authorized to use this drawing, which shows a modern typical Danish bacon factory, in connection with his report to the Canadian authorities. — The drawing is to be used for this purpose only and must not be utilized for any commercial purpose.

M. Nicolaisen & Kruse
Consulting Engineers.
Hammerichsgade 14, Copenhagen, V. Denmark

- 1 Pig sties
- 2 Filling room.
- 3 Bleeding room.
- 4 Slaughtering hall.
- 5 Cooling room.
- 6 Bacon cold stores.
- 7 Salting room.
- 8 Packing & dispatch room.
- 9 Brine preparing room.
- 10 Hides cooling room.
- 11 Meat offals cooling room.
- 12 Fat cooling room.
- 13 Local dispatch room.
- 14 Entrance.
- 15 Office.
- 16 Director.
- 17 Box.
- 18 Cloakroom.
- 19 W.C.
- 20 Foreman.
- 21 Gut clearing room.
- 22 Manure room.
- 23 Gut store.
- 24 Sausage factory.
- 25 Cooking room.
- 26 Smoking room.
- 27 Sausage cooling room.
- 28 Fat melting room.
- 29 W.C.
- 30 Boiled room.
- 31 Water softening & pumps.
- 32 Engine room.
- 33 Carcass room.
- 34 Rendering plant.
- 35 Blood boiling room.
- 36 Rendering plant.
- 37 Solder store.
- 38 Chimney stack.
- 39 Ammonia condenser.
- 40 Brine filter & tanks.
- 41 Sandust store.
- 42 Sausage store.
- 43 Bath & W.C.
- 44 Veterinary surgeon.
- 45 Cloth drying.
- 46 Cloth drying.
- 47 Bath.
- 48 Workmen's room.
- 49 Stores for salt & kroppers.
- 50 Water tank for hot water.
- 51 Water tank for cold water.

APPENDIX IV—PART ONE.

ESTIMATE FOR AN EXPORT BACON FACTORY
FOR 45,000 PIGS A YEAR

(See Drawing No. 1006)

ITEM 1—*Steam Power and Refrigerating Machinery.*

Steam boiler, feed pump, feed heater, superheater, cold water tank, hot water tank, water circulating pump with motor, water softener, steam engine with direct coupled ammonia compressor including all fittings, handrails, driving belts, sprinkler condenser, liquid receiver, cold water pump with motor, cooling batteries, all valves and pipes and first charge of ammonia and oil..... \$ 19,889

ITEM 2—*Electric Machinery.*

Dynamo, electric motors, which are not mentioned elsewhere, wires, armatures and switchboard for light and power 7,881

ITEM 3—*Sliding Rails* 2,534ITEM 4—*Machinery and Equipment for Slaughtering Hall.*

Slaughter lift, scalding tub with lifting apparatus, dehairing machine, singeing machine, washing drum, blood boiling and pressing plant, grindstone, shafts and pulleys, usual hanging irons, small galvanised hanging irons for refrigerating rooms, hoist chains, trucks for hanging irons, trucks for meat and meat offals, bacon trucks and other trucks 7,171

ITEM 5—*Brine Plant.*

Circulator, pumps, pipes and valves for salting and injection, outlet pipes and valves, brine filter and holding down timbers.... 1,548

ITEM 6—*Fat-melting Plant.*

Melting kettle, refining kettle, platform and all pipes and valves..... 2,956

ITEM 7—*Rendering Plant.*

Autoclav, fat separator, platform, cake breaker, drying apparatus for blood and bonemeal, disintegrator, elevator and sieve, shafts and pulleys, all pumps and valves 5,743

ITEM 8—*Sausage Factory.*

Chopping knife with 9 blades, meat cutter, meat mincer, mixing machine, raw fat cutter, grindstone, spice mill, mixing trough, sausage filler, boiling kettle, shafts, moulds and spice boxes..... 3,806

ITEM 9—*Pipes.*

Pipes for steam, hot and cold water, condensing water and heating 5,490

ITEM 10—*Miscellaneous Tools.*

All knives and saws with saw blades, head splitter, nail puller, brine injectors with tubes and needles and spare parts, lard cocks for filling bladders, shoulder blade remover, oil cloth aprons and gaiters, thermometer, brine tester, brushes, gut cleaning machine, ear marks and all hanging irons or hooks 1,475

ITEM 11—*Furniture.*

Furniture for office, manager's office, workmen's room and veterinary surgeon's room 2,337

Total for machinery and tools \$ 60,830

Buildings, including boiler installation, chimney stack and sewers 63,073

Total for complete factory \$123,903

In order to compare prices, the following unit prices at present ruling here in Denmark are given:

Stock bricks, per 1,000.....	\$ 12.80
Facing bricks, per 1,000	18.00
Portland cement, per ton (2,240 lbs.)	20.00
Wood, per cubic foot .....	.48
Wages for bricklayer, per hour .....	.51

APPENDIX IV—PART Two.

ROEDDING EXPORT CO-OPERATIVE BACON FACTORY.
 (Capacity, 30,000-40,000 Pigs a Year.)

BUILDING COSTS.**ITEM 1—Steam and Refrigerating Machinery.**

Vertical steam boiler, ammonia compressor with all fittings, hand-rails, belts, condenser with ammonia receiver, cooling batteries and all pipes and valves. First charge of ammonia and oil..... \$ 8,130

ITEM 2—Electric Machinery.

All motors, which are not mentioned elsewhere, wires, armatures and switchboard for power and light 5,550

ITEM 3—Sliding Rails 2,370

ITEM 4—Machinery and Equipment for Slaughtering.

Slaughter lift, scalding tub with lifting apparatus, debairing machine, singeing machine, head washing machine, blood boiling and pressing plant, grindstone, shafts and pulleys, hanging irons for slaughtering hall and refrigerating rooms, hoist chains, trucks for hanging irons, trucks for meat and meat offals, bacon trucks and other trucks and scales 6,370

ITEM 5—Brine Plant.

Circulator, pumps, pipes and valves for salting and injection, outlet pipes and valves, brine filter and holding down timbers..... 1,462

ITEM 6—Fat Melting Plant.

Melting kettle, refining kettle, platform and all pipes and valves..... 2,880

ITEM 7—Rendering Plant.

Autoclav, fat separator, platform and all valves and pipes..... 2,155

ITEM 8—Sausage Factory.

Meat cutter, meat mincer, mixing machine, sausage filler, spice mill and shafting 720

ITEM 9—Pipes.

Pipes for steam, hot and cold water, condensing water and including insulation and pumps 5,300

ITEM 10—Miscellaneous Tools 392

ITEM 11—Furniture.

Furniture for office, manager's office, workmen's room and veterinary surgeon's room 790

Total for machinery and tools \$35,727

Buildings, including boiler installation, chimney stack, well, sewers and ventilation 48,000

Total for buildings \$83,727

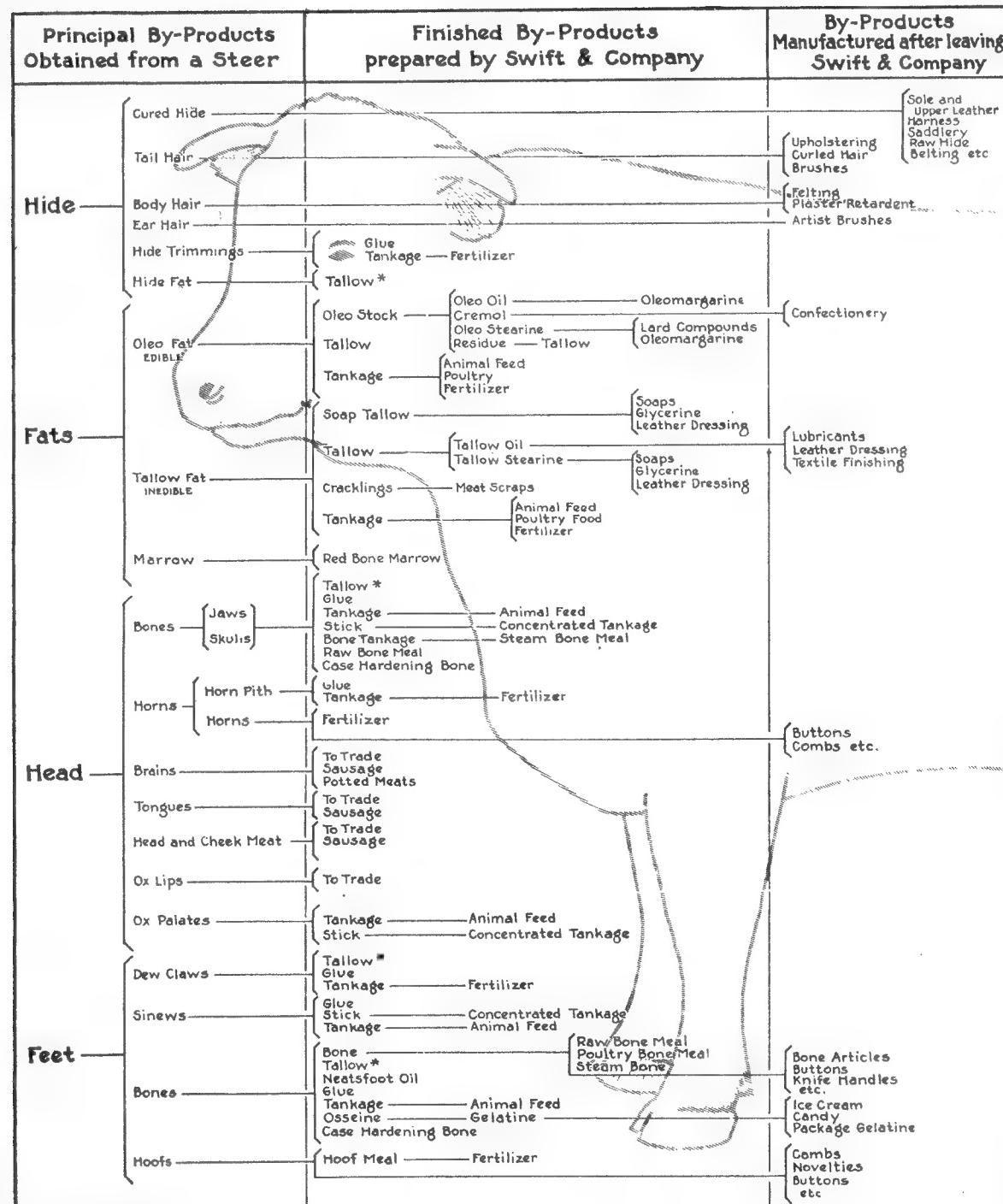
Consulting engineer's fees 4,880

Loss of interests, legal papers, supervision and administration 4,550

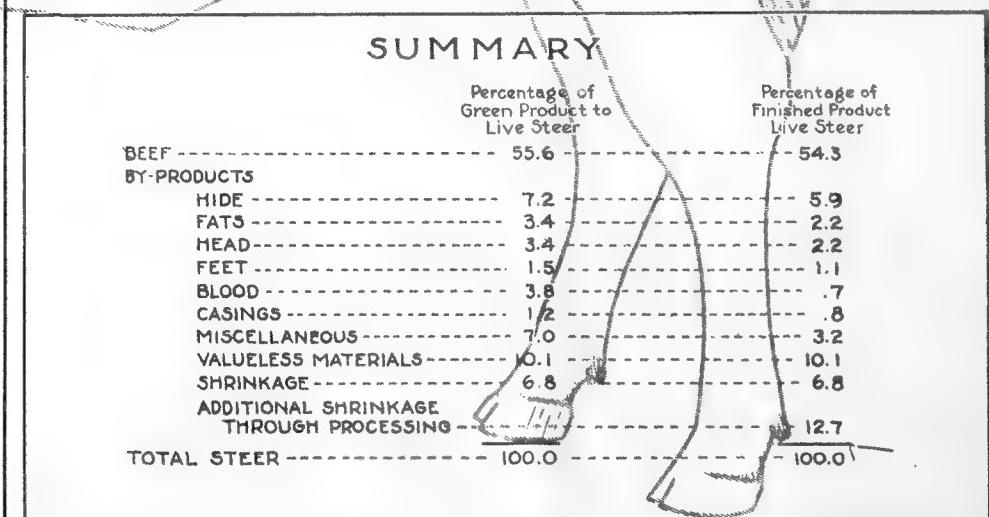
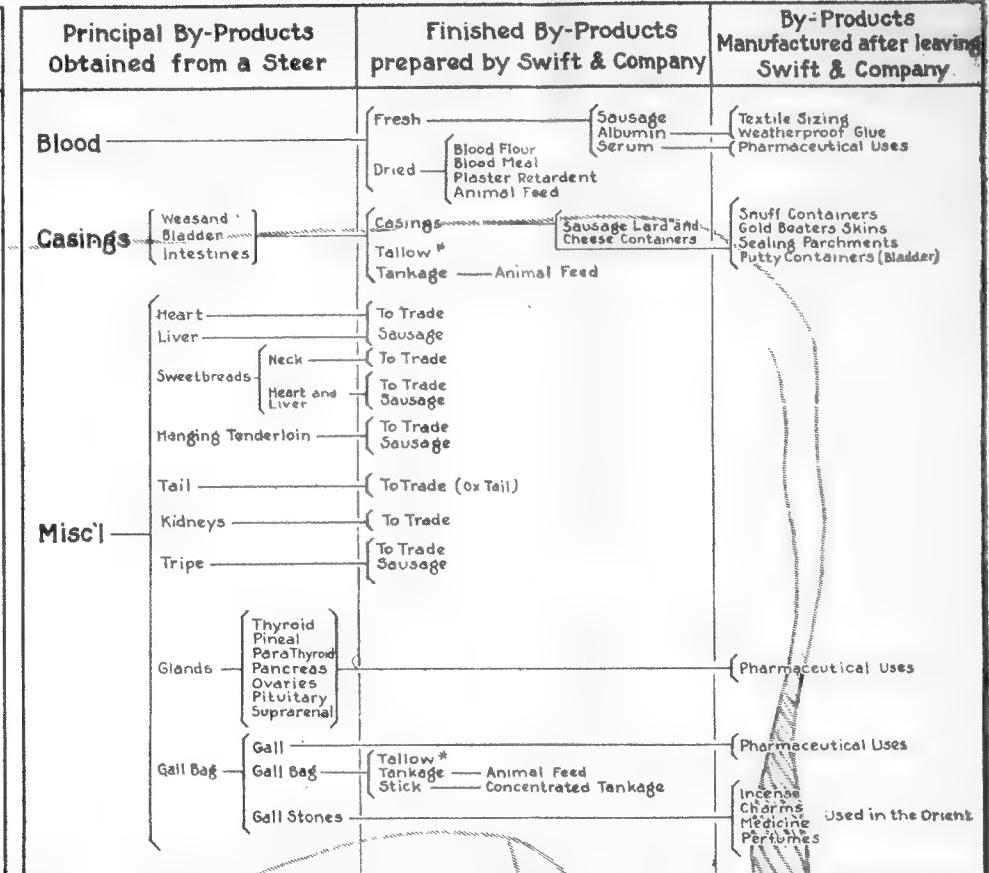
Total for complete factory \$93,157

To the above costs must be added freight and duty on imported machinery and also travelling expenses and cost of supervision. The price for the building is estimated according to prices ruling here in Denmark, but would probably be somewhat different in Canada.

APPENDIX V.



* Processed same as Tallow Fat (inedible)

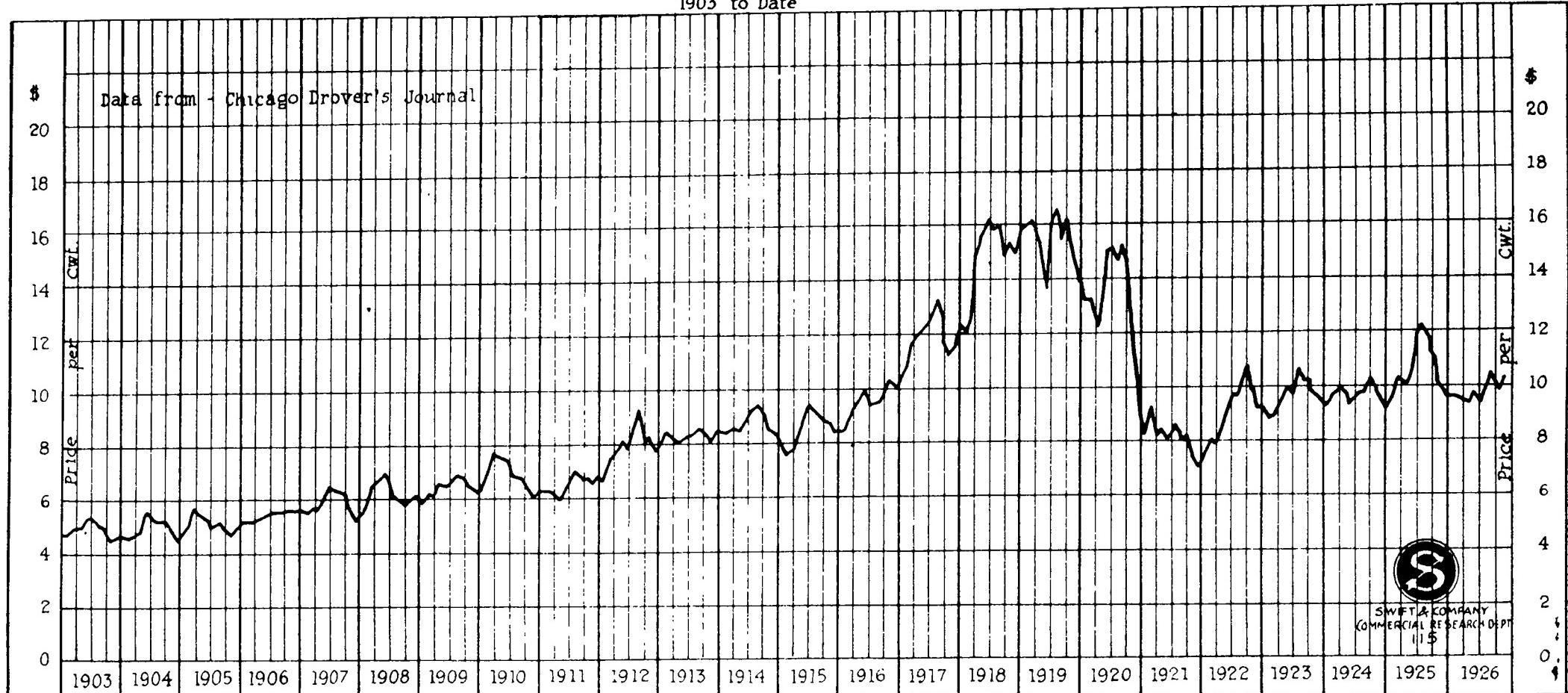


Swift & Company
COMMERCIAL RESEARCH DEPT
CHICAGO

N.Y. 275

Courtesy of Swift and Company.

APPENDIX VI.—CHART NO. ONE.

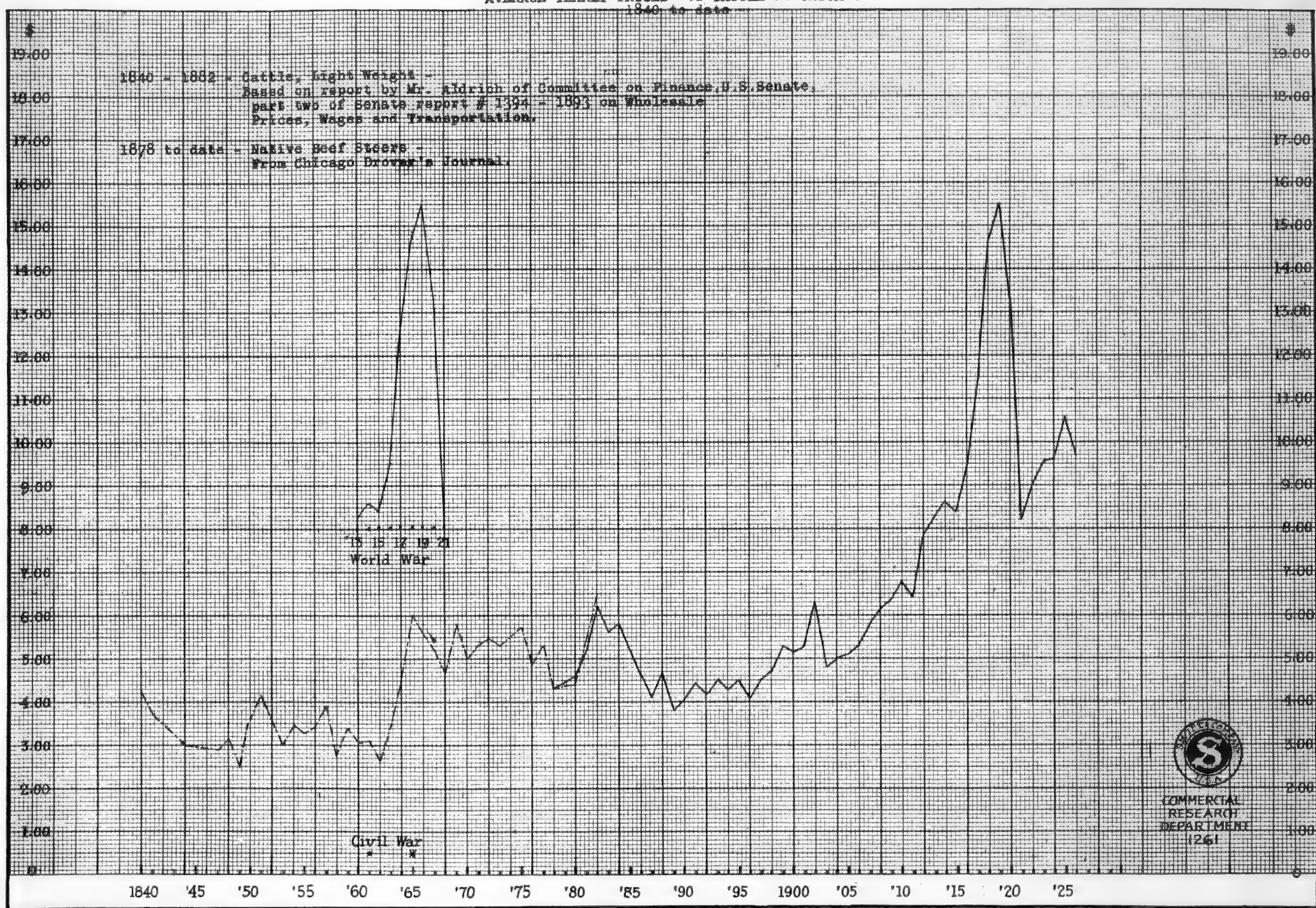
AVERAGE PRICE OF NATIVE BEEF STEERS AT CHICAGO
1903 to Date

Courtesy of Swift and Company.

APPENDIX VI.—CHART No. Two.

AVERAGE YEARLY PRICES of CATTLE at CHICAGO

1840 to date

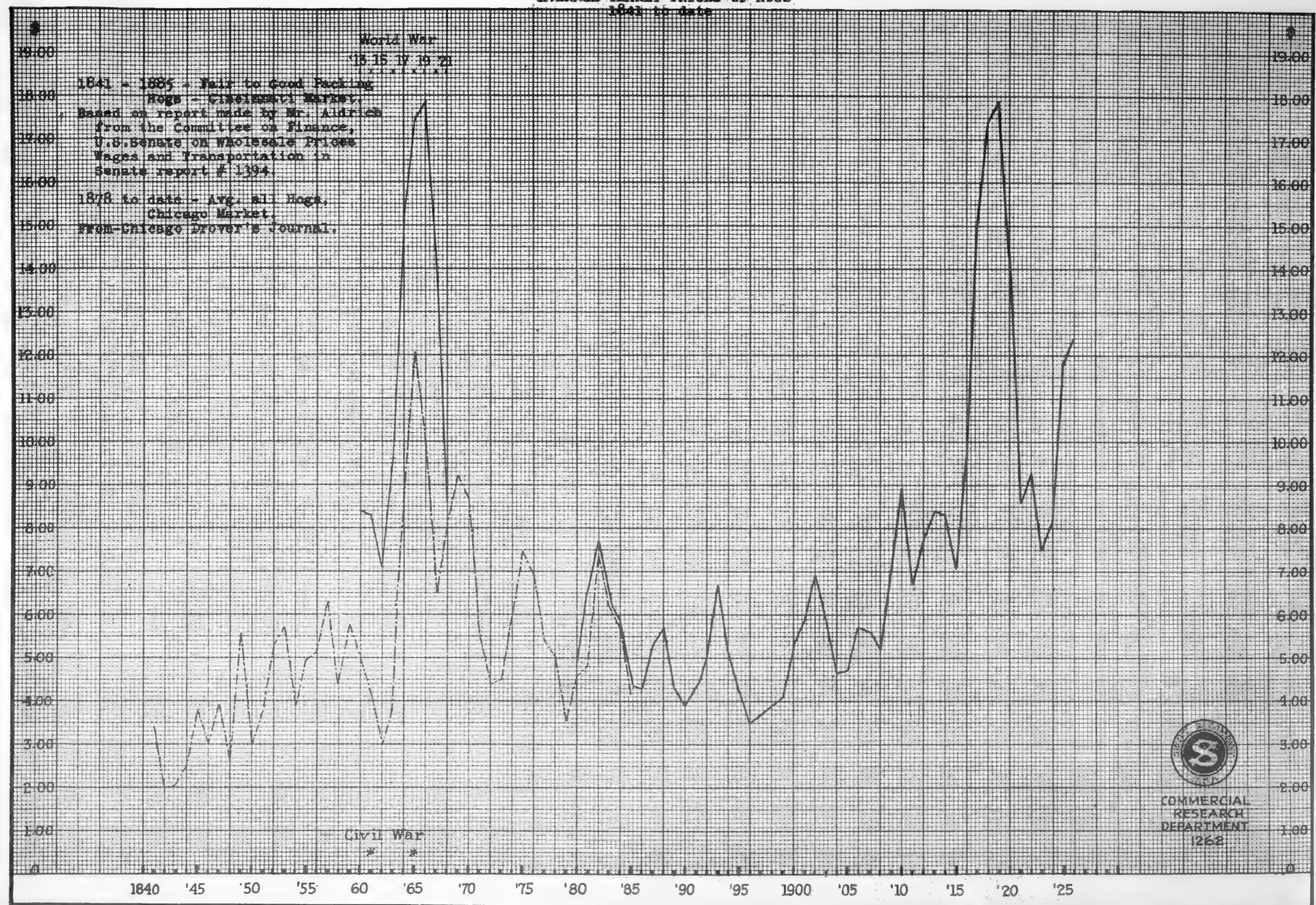




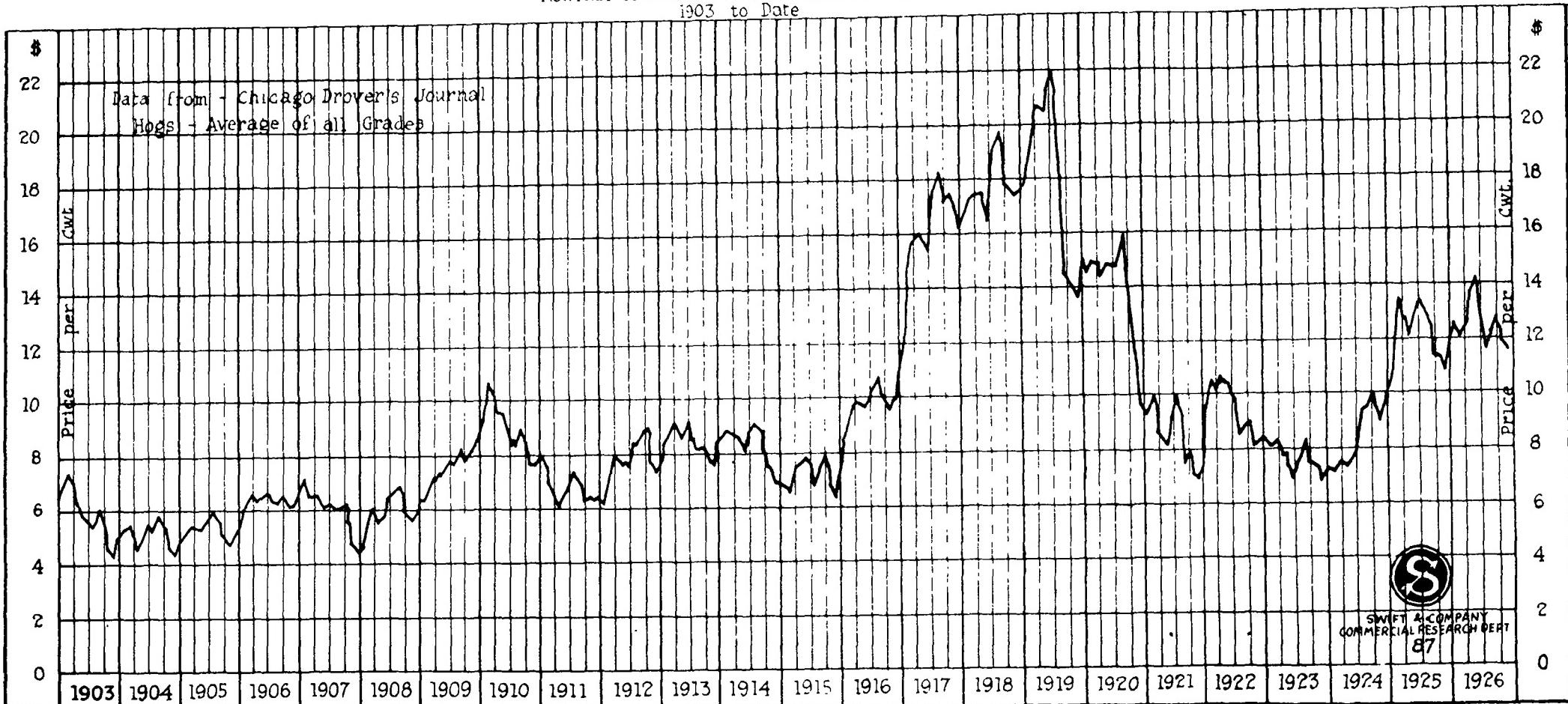
APPENDIX VI.—CHART NO. THREE

AVERAGE YEARLY PRICES OF HOGS

1841 to date



APPENDIX VI.—CHART NO. FOUR.

MONTHLY AVERAGE PRICE OF HOGS AT CHICAGO
1903 to Date

Courtesy of Swift and Company.

APPENDIX VII.

Table showing Yearly Quantities of Home Grown and Imported Meats
(Beef, Mutton and Lamb) available for consumption in U.K., 1907-1926.

T O N S	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
TOTALS <small>Including small quantities from other sources.</small>																				
Live Stock and Fresh Killed																				
North American Chilled & Frozen	1,100,280	169,031	212,442	123,129	165,721	1,770,603														
Australasian & South African Frozen	1,120,900	141,705	271,568	72,703	140,015	1,746,891														
Home Grown	1,128,600	189,386	299,335	43,535	115,657	1,776,813														
	1,121,760	252,154	334,481	24,335	79,890	1,812,620														
	1,121,170	212,019	407,359	8,855	71,260	1,820,663														
	1,108,100	214,886	427,205	888	24,278	1,778,357														
	1,095,300	272,900	447,360	401	10,245	1,828,206														
	1,115,560	286,609	403,476	4,380	7,852	1,817,877														
	1,118,010	286,380	323,762	53,835	2,552	1,784,870														
	1,142,910	211,409	267,309	54,998	827	1,677,558														
	1,085,000	182,212	188,372	61,839	1,593	1,519,732														
	1,073,200	116,540	162,931	208,521	—	1,562,536														
	1,063,800	192,687	280,642	54,299	—	1,592,155														
	1,038,980	356,204	434,472	18,616	3,073	1,882,467														
	1,056,400	369,604	533,636	18,199	26,330	2,000,184														
	1,021,900	287,553	525,163	7,516	27,001	1,870,567														
	1,065,000	259,059	656,363	8,103	28,637	2,016,769														
	1,075,000	208,609	654,291	7,858	32,941	1,983,561														
	1,089,000	246,434	622,827	11,512	44,015	2,019,670														
	1,105,600	256,896	663,063	7,292	28,940	2,064,576														

Courtesy of W. Weddel & Company, Ltd., London, Eng.

DIAGRAM SHEWING RELATIVE PRICES OF BACON ON THE

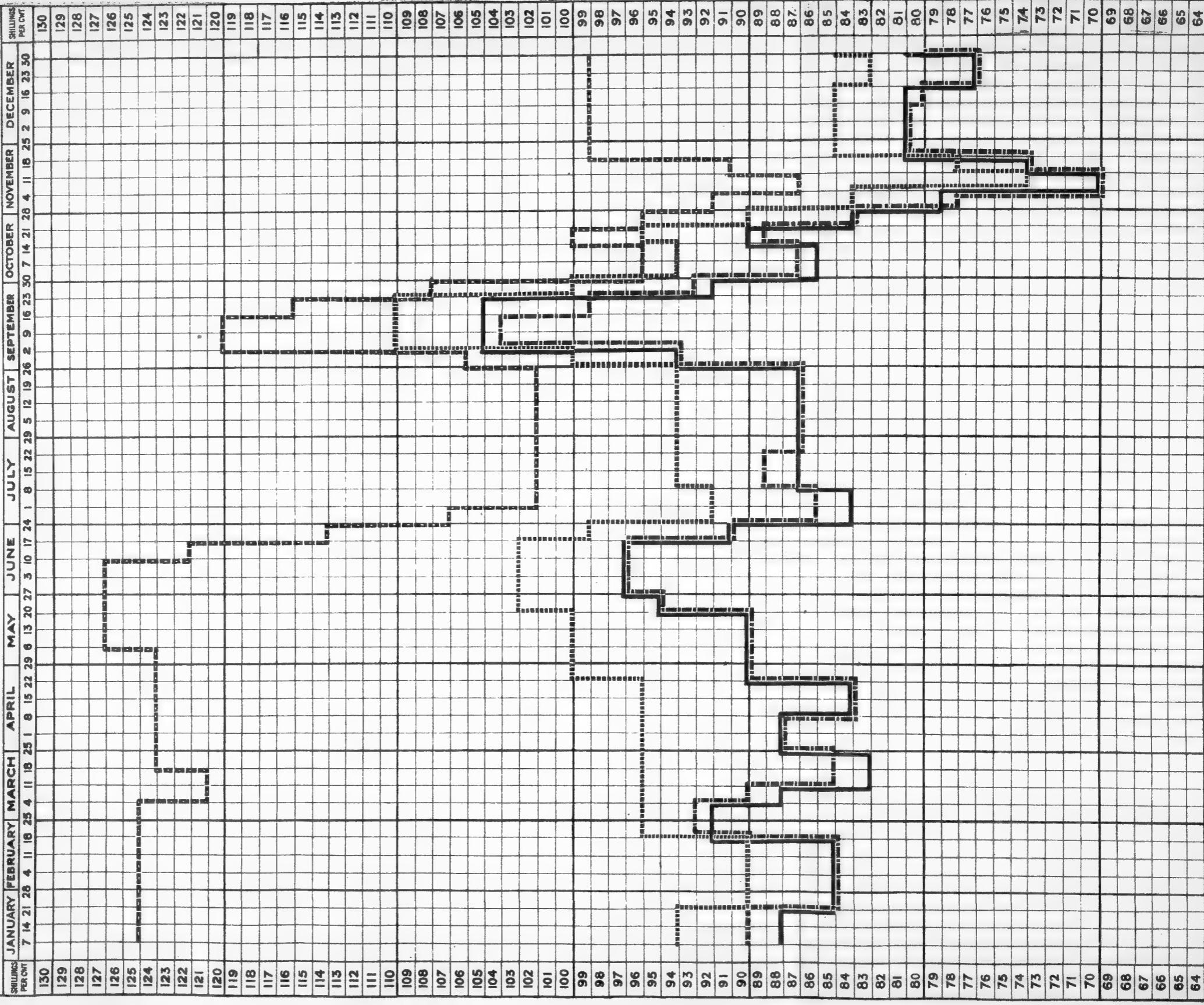
LONDON PROVISION EXCHANGE LTD. DURING 1927

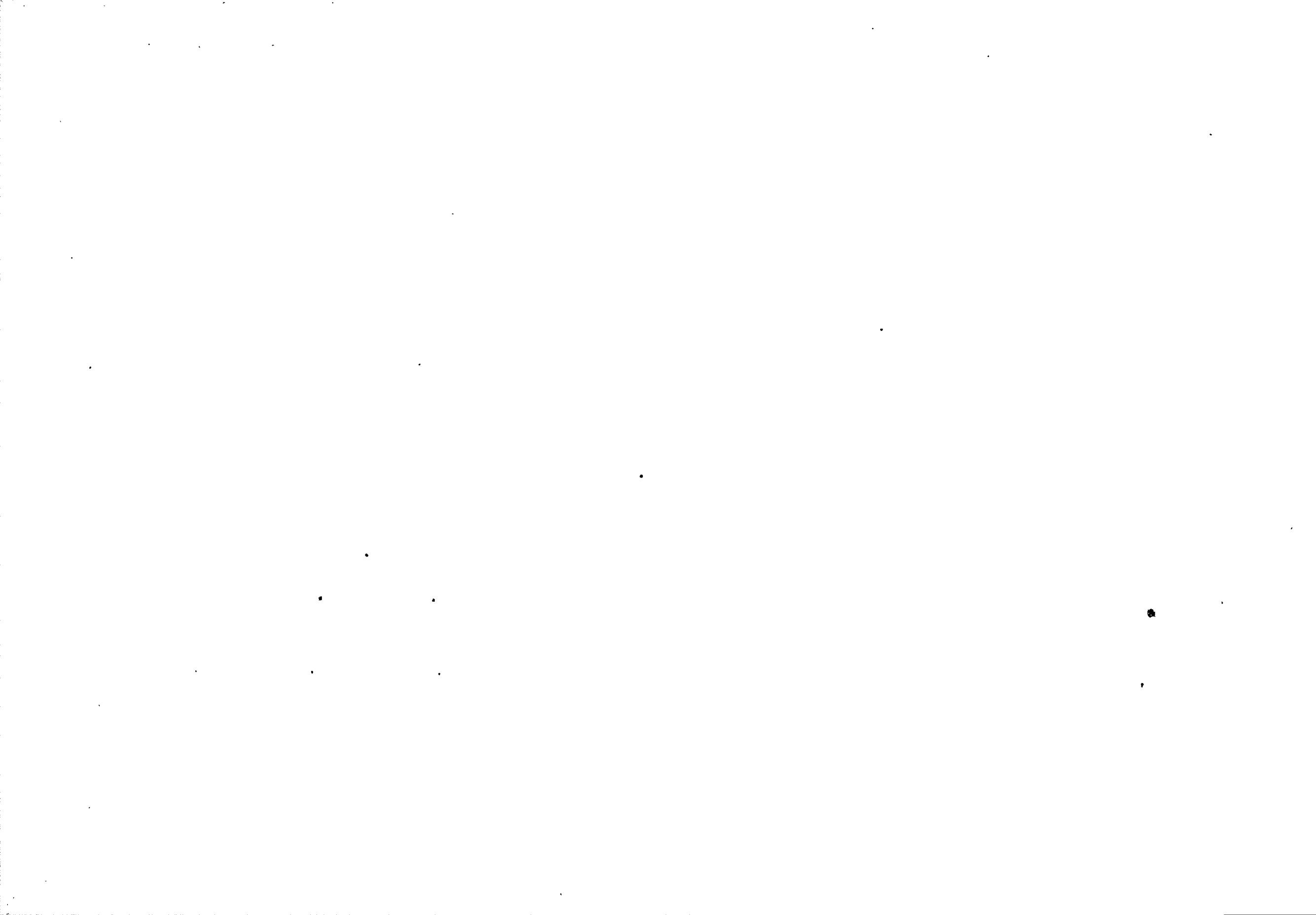
R. H. THOMPSON & CO.

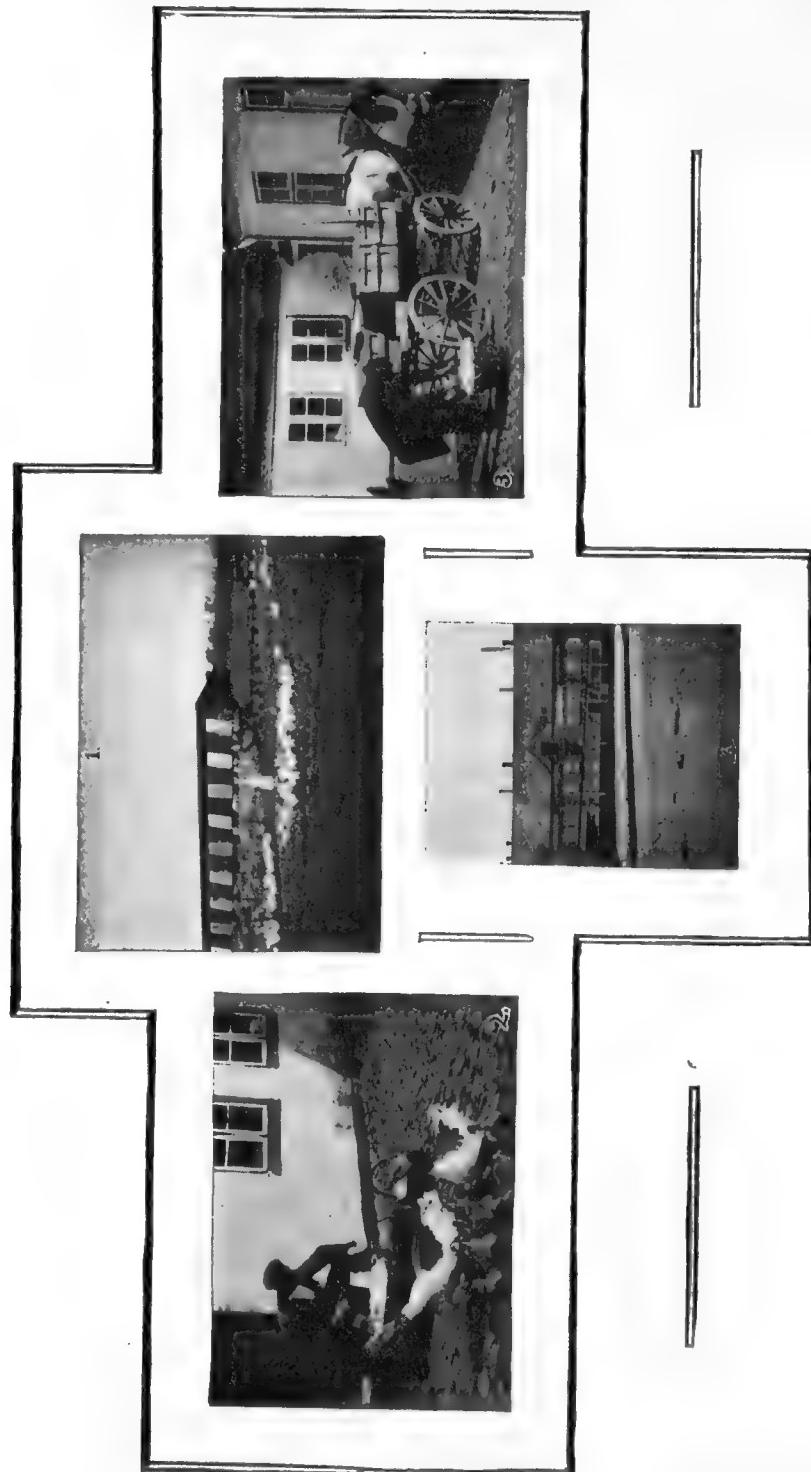
IMPORTERS OF CONTINENTAL BACON

6, BOROUGH HIGH STREET, LONDON, & 15, LANCASTER AVENUE, MANCHESTER.

IRISH ■■■■■ DANISH ■■■■ SWEDISH ■■■■■ DUTCH ■■■■■







Danish Poultry Farm Scenes.

APPENDIX IX.

SYNOPSIS OF THE CO-OPERATIVE MARKETING ASSOCIATIONS' ACT OF SASKATCHEWAN.

1. Any ten persons in Saskatchewan may incorporate.
2. The association may be with or without share capital.
3. The association is on the non-profit co-operative plan.
4. The objects are, primarily, to carry on all kinds of operations connected with marketing agricultural products and byproducts thereof, to:
 - (a) market, sell, preserve, harvest, dry, process, manufacture, can, pack, grade, store, handle, or utilise any agricultural product;
 - (b) borrow money on bonds, debentures or debenture stock;
 - (c) mortgage the products;
 - (d) advance money to members;
 - (e) unite with any other association in employing and using same personnel, methods and agencies;
 - (f) enter into arrangements with any authorities to obtain rights, privileges and concessions;
 - (g) take power from any government to carry on any business authorised;
 - (h) acquire real and personal property;
 - (i) invest moneys not immediately required;
 - (j) handle negotiable financial instruments;
 - (k) deal in any manner with property and rights of association;
 - (l) do all above as principals, agents, contractors, trustees or otherwise;
 - (m) do anything conducive to the attainment of above objects.
5. Printed or typewritten organisation bylaws, to provide for:
 - (a) meetings;
 - (b) quorum;
 - (c) voting;
 - (d) directors;
 - (e) fees, if any;
 - (f) shares, if any;
 - (g) charges, if any, for services rendered to members;
 - (h) contract;
 - (i) referendum;
 - (j) membership, number and qualifications;
 - (k) division of territory and election of directors;
 - (l) election of delegates and delegation of powers;
 - (m) executive committee.
6. Bylaws may be amended by directors to be approved by members.

7. Contract. Association and members may make contract, time not to exceed seven years:

- (a) association may sell or re-sell products with or without taking title;
- (b) pay resale price to members, less:
 - (1) selling, overhead and other costs;
 - (2) reserves;
 - (3) interest on shares (if any) not over 8%;
- (c) liquidated damages for non-performance by members.

8. Membership:

- (a) only persons engaged in production, including:
 - (1) tenants;
 - (2) landlords who receive all or part of crop;
- (b) membership certificate when fee paid in full;
- (c) no share certificate issued to member until fully paid, but note may be accepted, in which case certificate held by association:
 - (1) person not engaged in production shall not be issued with share, such information to be printed on certificate;
 - (2) association may purchase own shares, provided liabilities not in excess of 50% of assets;
- (d) when members' power by bylaw has been delegated to delegates, members cannot exercise such power, while bylaw in force;
- (e) one member one vote, and no proxy voting.

9. Directors and officers:

- (a) may make bylaws, but such bylaws to be submitted to review at annual meeting;
- (b) elect president, one or more vice-presidents, appoint secretary and treasurer or secretary-treasurer;
- (c) director must not be party to contract for profit, except as other members;
- (d) fair remuneration for directors.

10. Meetings:

- (a) one or more general meetings annually;
- (b) special meetings, called by directors, voluntarily, or on request of 10% of members or 25% of district delegates;
- (c) ten days' notice.

11. Records:

- (a) share register;
- (b) set commercial books showing all transactions;
- (c) open for inspection subject to regulations of general meeting.

12. Accounts and returns:

- (a) to be audited by chartered accountant;
- (b) within two months after end of financial year send to registrar an annual return:

- (1) financial statement;
- (2) general statement suitable for farmers' understanding:
 - i. total quantity of each kind of product received and unsold amount;
 - ii. gross receipts from products;
 - iii. gross receipts from other sources;
 - iv. total paid to members;
 - v. amount deducted for salaries;
 - vi. deductions for other expenses directly connected with marketing of products;
 - vii. deductions for acquisition of real and personal property;
 - viii. deductions for reserves;
- (3) additional information as required;
- (c) every member to get copy of annual return;
- (d) return to be in form prescribed by Registrar.

13. Offences and penalties:

- (a) offence to commit anything contrary to the Act;
- (b) offence to wilfully neglect or refuse to fulfil requirements;
- (c) offence deemed committed by every officer, unless he can prove ignorance or attempt to prevent commission of offence;
- (d) penalty on summary conviction not exceeding \$100 and costs;
- (e) Registrar may remove name from register if association fails or refuses to forward a report or document.

14. Dissolution:

- A (a) by consent of one-half of members in meeting and testified by signatures to an instrument of dissolution;
- (b) document to show:
 - (1) assets and liabilities;
 - (2) number of members and nature of respective interests;
 - (3) claims of creditors and provision for payment;
 - (4) intended appropriation or division of funds or property, unless left to award of Registrar;
 - (5) statutory declaration by president and secretary that provisions of Act complied with;
- (c) advertising in *Saskatchewan Gazette* and local newspaper.
- B (a) by Registrar, if he has reason to believe an association is not in operation;
- (b) letter of inquiry sent;
- (c) after elapse of one month, second letter, registered, sent, stating, if no answer received, proposed dissolution will be advertised;
- (d) if answer received, that association not in operation, or if no answer received, notice of proposed dissolution advertised in *Saskatchewan Gazette*;
- (e) unless cause shown to the contrary, on expiration of one month the name of association is struck off register, and advertisement made in *Saskatchewan Gazette*.

- C (a) association is still considered subsisting so long as any matter connected therewith remains unsettled;
- (b) association may be wound up under *The Companies Winding Up Act*, and liquidator send return to Registrar;
- (c) liquidator liable to penalty of \$5.00 for every day default of sending in return continues.

15. General:

(a) Fees:

(1) filing documents of incorporation	\$10.00
(2) advertising incorporation in <i>Saskatchewan Gazette</i>	2.50
	—————\$12.50
(3) filing amendments	2.50
(4) filing annual return	1.00
(5) search of records	.25
(6) advertising dissolution	actual cost
(b) fees to be paid to consolidated fund;	
(c) association with share capital deemed to be a company within meaning of section 135 of Companies Act;	
(d) Sales of Shares Act not to apply to this Act;	
(e) no deductions, from gross amount received from sale of products, other than as provided in Act;	
(f) a company or association having word "co-operative" in name and marketing agricultural products on non-profit plan may avail itself of provisions of this Act by filing evidence of incorporation before July, 1926. (Note—No company or association took advantage of this provision.)	

1



